

**CURRICULUM INTEGRATION AND KNOWLEDGE REPRESENTATION IN
PRACTICAL LEARNING ENVIRONMENTS: CONTINUING DILEMMAS
FOR PHYSICAL EDUCATION IN SCOTLAND.**

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Abstract

My years teaching physical education examination awards in high school revealed some of the pedagogical complexities involved in putting into practice experiential learning approaches in a formal examination context. Furthermore, analysis of assessment results at national level indicated profound annual imbalances between students' practical performance and analytical abilities (as assessed by written examination answers). Therefore, the central research question in this thesis examines, through a progressive programme of research, the reasons why there is such a marked imbalance in the attainment profile of students.

The first phase of research collected evidence from 40 semi-structured teacher and group student interviews, completed in ten high schools. Results highlighted marked differences in the pedagogical practices teachers adopted when attempting to deploy practical experiential learning approaches. There were some schools where the short-term assessment pressures were determining the methodology and quality of student learning experiences. There were other schools where prescriptive assessment answers had been developed and lastly schools which were characterised by a high level of teacher expertise for practical experiential teaching. Crucially, students in these schools completed the written assessment answers in the divergent open manner expected.

To understand, in detail, the effects of different pedagogical approaches on student learning and assessment, the second research phase tracked the development of students' learning in six of the original ten schools, with schools being selected from each of the types of schools previously identified. Analysis of students' assessment evidence revealed that while some schools results had improved, year-on-year improvements have proved difficult to achieve in many schools.

Throughout both research phases the dominant attribution of teachers in explaining students' under-performance was the nature of the written assessment instrument used in examinations. Consequently, the third phase of research compared oral and written assessment procedures in order to learn more about the accuracy and authenticity of both methods of assessment. Evidence showed, that while the higher levels of attainment anticipated by many teachers were not realized, there were encouraging indications that oral assessment could enhance the quality of students' learning and assessment experience, and inform teachers' curriculum decision-making.

As well as progressively investigating the central research question it was also pertinent to explore factors associated with how examination awards have been conceived, and how they might be constructed in future years. The wider conceptual analysis and framing of the central research question pointed up how current difficulties in relation to assessment challenge existing epistemological and ontological assumptions about the nature of physical education.

The concluding chapter summarizes the major findings arising from the different phases of applied research and reports on the types of interventions which might best address the shortcomings reported in the thesis. Accordingly, the major professional issues associated with teaching, learning and assessment are considered prior to reviewing how professional development opportunities for teachers could be improved. Finally, research interventions which could provide more detailed insights on how to improve practical experiential learning environments in examination awards are outlined.

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Abbreviations

AP	Analysis of Performance
ADP	Analysis and Development of Performance
AiFL	Assessment is for Learning
BSSSS	Board of Senior Secondary School Studies
GTCS	General Teaching Council for Scotland
HGPE	Higher Grade Physical Education
HMIE	Her Majesty's Inspectorate of Education
HSC	Higher School Certificate
HSPE	Higher Still Physical Education
IP	Investigation of Performance
LTS	Learning and Teaching Scotland
NCPE	National Curriculum of Physical Education
NQ	National Qualifications
PE	Physical Education
SAC	Subject Advisory Committees
SCCC	Scottish Consultative Committee on the Curriculum
SED	Scottish Education Department
SGPE	Standard Grade Physical Education
SJPE	Scottish Journal of Physical Education
SPEA	Scottish Physical Education Association
SQA	Scottish Qualifications Authority
SUCE	Scottish Universities Council on Entrance
TEI	Teacher Education Institutions
TfU	Teaching for Understanding
TGfU	Teaching Games for Understanding

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Authors Declaration

I declare that this thesis is my own unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of Edinburgh. It has not been submitted before for any degree of examination in any other University.

Papers / Conferences

In conjunction with this thesis, the following papers have been published and presentations completed.

Papers in refereed Journals

Thorburn, M. (2001b) 'Critical Times for Critical Thinking: The teaching and assessment of knowledge and understanding in certificate physical education – A Scottish Perspective', *British Journal of Teaching Physical Education* 32 (3) 42-45.

Thorburn, M. and Collins, D. (2003) 'Integrated curriculum models and their effects on teachers' pedagogy practices', *European Physical Education Review* 9 (2) 187-211.

Thorburn, M. (2004b) 'Providing 'Opportunity for All' through Higher Still: A continuing challenge for Physical Education in Scotland', *Scottish Educational Review* 24 (1) 66-78.

Thorburn, M. and Collins, D. (2006a) 'The effects of an integrated curriculum model of student learning and attainment', *European Physical Education Review* 12 (1) 31-50.

Thorburn, M. and Collins, D. (2006b) 'Accuracy and authenticity of oral and written assessments in high-stakes school examinations', *Curriculum Journal* 17 (1) 3-25.

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Thorburn, M. (2007) 'Achieving conceptual and curriculum coherence in high-stakes school examinations in physical education', *Physical Education and Sport Pedagogy* 12 (2) 163-184.

Thorburn, M. (2008) 'Articulating a Merleau-Pontian phenomenology of physical education: the quest for active student engagement and authentic assessment in high-stakes examination awards', *European Physical Education Review* 14 (2) 263-280.

Papers in non-refereed Journals

Thorburn, M. (1999) 'Is it real PE today? Knowledge and Understanding in Standard Grade, Higher and Higher Still Physical Education', *Scottish Journal of Physical Education* 27 (1) 19-29.

Conference presentations

Thorburn, M. (2002) 'Developing higher level awards as preparation for Higher Education – Evidence from a Physical Education Case Study.' University of Hertfordshire / Learning and Teaching Support Network: Third Annual Skills Conference, Skills Development in Higher Education: Forging Links, July 10th / July 11th.

Thorburn, M. (2002) 'Developing higher level awards as preparation for Higher Education – Knowledge and cognitive development in practical learning environments', Scottish Educational Research Association (SERA). Dundee, September 26th.

Thorburn, M. (2003) 'Integrated curriculum model and their effects on teachers' pedagogy practices', British Educational Research Association (BERA). Edinburgh, September 11th.

Thorburn, M. (2003) 'Providing 'Opportunity for All' without Curriculum Reductionism and Over Assessment: A continuing challenge for Physical Education in Scotland', Scottish Educational Research Association (SERA). Perth, November 28th.

Thorburn, M. (2004) 'The effects of an integrated curriculum model on students learning and attainment', British Educational Research Association (BERA). Manchester, September 16th.

Thorburn, M. (2004) 'Accuracy and authenticity of oral and written assessments in high-stakes schools examinations', Scottish Educational Research Association (SERA). Perth, November 29th.

Thorburn, M. (2005) 'Re-conceptualising high-stakes school examinations in Physical Education: The promise of phenomenology', British Philosophy of Sport Association (BPSA) Annual Conference. Durham, May 12-14th.

Thorburn, M. (2005) 'Achieving Authentic Assessment in Physical Education: Evidence from a High-Stakes School Examination in Scotland', European Education Research Association (EERA). Dublin, September 7th – 10th.

Thorburn, M. (2005) 'Emerging Continuous Professional Development Issues for Physical Education Teachers in High-Stakes School Examinations: Evidence from a Scottish Case Study', European Education Research Association (EERA). Dublin, September 7th – 10th.

Chapter One: INTRODUCTION

1.1 Introduction

My years teaching examination awards in high school from 1988 onwards were characterized by students asking whether it was ‘real physical education today’ as they entered the department (Thorburn, 1999a, p. 19). If classroom based sessions were ever necessary then students’ engagement was invariably poorer than for practically based sessions in Games Halls and the like. Classroom sessions were by implication lacking in ‘reality’ as they did not match students’ basic expectations of what physical education (PE) was essentially about. Provided with a rationale which indicated that a ‘holistic approach’ (Scottish Examination Board, 1987, 1.4 p. 4) should be adopted where students will acquire ‘... through first hand experience, a knowledge of these activities, their own ability in them, and some of the principles involved’ I, along with colleagues, was encouraged to take forward new professional challenges and design lessons which were practical and experiential in nature with students actively and constructively engaged in rich learning tasks.

For a subject that has often been concerned about its value and status (Armour and Jones, 1998) these were exciting and proactive times. However, some teachers also viewed matters with a degree of trepidation because, for the first time, curricula were more closely prescribed by an assessment agenda which was ‘outwith the formal control of the school Physical Education department’ (Brewer and Sharp, 1999, p. 541). Up until then many teachers had taught relatively uncomplicated activity-based programmes which often lacked clear progression unless students participated in sporting activities as part of the extended school day or outside of school time. Now interested students could choose PE as an examination award, initially in the middle secondary school years (15-16 years) and, after 1993, within the senior secondary school (17-18 years). Consequently, during this period (late 1980’s and the entirety of the 1990’s), a great deal of teachers’ anecdotal commentary at formal and informal meetings was about the pragmatic planning, pedagogical and

assessment challenges of creating effective practical experiential learning environments within formalized school examination awards.

MacLeod (1994) praised the general adaptability of teachers as they sought to introduce Standard Grade Physical Education (SGPE), a two year course for students in the middle years of secondary schooling. However, adverse comment began to emerge about the quality of the teaching approaches adopted, with Her Majesty's Inspectorate of Education (HMIE) reporting that:

Too many teachers resort to the classroom, a 'talk and chalk' approach and the use of simple worksheets. This is in contrast to the spirit of the Standard Grade Arrangements Document and the emphasis on a practical-experiential approach to the development of knowledge and understanding... [which] ... should be developed in practical contexts, ideally with students working on different levels of practical tasks which allow them to display and develop their practical understanding (SOED/HMIE, 1995, 5.29).

Thus, evidence was beginning to emerge of a gap between policy expectations as monitored by the HMIE, and the ability of teachers to deliver the standards of attainment expected through practical experiential teaching and learning approaches. This is despite Brewer and Sharp (1999, p. 543) indicating that the extent to which the literature informing the rationale for the development of examination awards had 'been informed by research into successful teaching is not so evident'.

Within examination awards the weighting is equal (or nearly equal) between practical performance and the written assessments used for measurement of analytical abilities. However, the following example highlights the ongoing disparity in levels of attainment which has been prevalent across all awards for many years (SEB, 1996; SEB, 1997a; SQA, 1998b; SQA, 1999b; SQA, 2000b; SQA, 2001b; SQA, 2002b; SQA, 2003b). In Higher Still Physical Education (HSPE) at Higher level (an award typically completed over one year of senior schooling) in 2001, the national average was 75.0

out of a possible 90.0 marks for Performance, the practical element of the award, yet for assessments in Analysis of Performance (AP), the national average was 24.7 out of a possible 60.0 marks and for the Investigation of Performance it was 15.1 out of 30.0 marks available. The combined total for the two analytical elements (39.8 out of 90.0) highlights the contrast between levels of attainment in performance and analytical areas – 83% against 44% respectively. Furthermore, these totals are the least disparate since awards at Higher level began in 1994. Apparently, the majority of students can achieve a high practical performance standard, although when asked to articulate their thoughts through written answers, their work is often poor or modest.

When fulfilling a more extended professional remit, which included being Principal Assessor for Higher Grade Physical Education (HGPE) from 1995-1999, trying to resolve some of the complex problems associated with such skewed results was difficult. How, for example, do you make balanced decisions when setting national pass / fail standards? If the overall pass rate was quite low some of the status and credibility benefits accruing from PE being an examination award could be lost. Conversely, if the overall pass rate was quite high this could add to the difficulties of some practically talented students passing awards if their analytical abilities were modest. In later years, when National Development Officer for HSPE from 1998 to 1999, the main focus of my responsibilities was on supporting teachers' concerns; most notably how could teachers sustain practical experiential learning approaches and still achieve high levels of attainment in the intended way with each student's own personal experience being the basis for the development of their written answers. Providing curriculum support materials which aimed to exemplify how this could be achieved was clearly important, for as Brewer and Sharp (1999, p. 544) note:

... it is hard for teachers to reconcile the competing claims of a rationale proclaiming the practical, experiential nature of Physical Education while at the same time supporting an assessment culture that has a minimum 50 per cent weighting towards written forms of examination.

However, as noted earlier, the results profile for awards at Higher level has remained steadfastly disparate for many years, so when joining the staff at the University of Edinburgh in 1999, the teaching, learning and assessment issues associated with the uneven attainment profile of awards was the central research question which merited investigation. Consequently, addressing why it has been such a difficult problem to remedy is the basis of the research. Analysis of this question might reveal why problems have been so sustained over many years as well as adding to knowledge about the curriculum, pedagogical and assessment complexities facing teachers when delivering these types of examination awards in secondary schools.

As well as investigating the central research question it is pertinent to examine some associated professional issues. These include reviewing some of the conceptual complexities which surround the construction of examination awards through exploring in preliminary fashion how examination awards might conceivably be constructed in future years. Therefore, at present a chain of concerns exists, extending from those based on immediate teaching, learning and assessment issues to those which focus on some of the broader professional and conceptual issues associated with enacting the rationale advanced for awards such as HSPE. Consequently, a progressive programme of research which focused initially on investigating the ongoing pragmatic dilemmas that face teachers on a daily basis was planned alongside later research which addressed some of the professional and conceptual complexities of designing awards like HSPE. In this way, it was possible to take ahead empirical research, as well as engaging in wider conceptual analysis of the central research question, so that the extent to which the current difficulties challenge existing epistemological and ontological assumptions can be understood in much greater depth.

In summary, given the strength of endorsement for practical experiential learning and the high uptake in students taking awards there is a clear need to investigate the ongoing imbalance in levels

of students' attainment. Thus Chapter 2 aims to build on accumulated professional insights by critically reviewing the teaching, learning and assessment issues which are most associated with curriculum integration and knowledge representation in examination awards in PE. This review is intended to provide the foundation for the subsequent programme of research which investigates how teachers and students are responding to the challenges which have been identified. Thereafter, Chapter 3 situates the programme of research within its context by examining the background historical and political situation against which policy was developed.

Chapter 4 discusses the methodology, and provides a detailed account of each of the three progressive research phases which were completed in an attempt to understand more about the central research question. This chapter outlines the general approach to research and the procedural and design issues which influenced data collection strategies used during each of the three phases of research. These include how schools were selected, the interview and piloting of question procedures which applied and the overall perspective adopted for validating the research programme.

The three chapters thereafter (Chapters 5-7 inclusive) report on findings which emerged from the data collected. Specifically, in Chapter 5 the following questions are examined:

- were teachers' beliefs and values favourably inclined towards the rationale for HSPE?
- did teachers consider that they were adequately prepared for teaching HSPE in terms of their content knowledge expertise?
- how did teachers' levels of content knowledge expertise impact upon their curriculum decision-making?
- how did teachers reconcile some of the specific challenges of teaching HSPE through the practical experiential learning approaches advocated?

In Chapter 6 the focus of analysis moves from a review of teacher interviews to a review of the effects of teachers' decision-making on students' learning experiences and on the development of students' analytical skills. Specifically, in Chapter 6 the following questions are examined:

- the influence of earlier learning on meeting the challenges of HSPE?
- the level of ongoing difference or otherwise in levels of attainment achieved in the two main areas of learning?
- the degree of difference between the national attainment profile and the profile of attainment in the sample schools selected?

The need for a third research phase arose from earlier teacher interview findings, where poor student performance was often attributed to the adverse effect of written assessment instruments.

Specifically, therefore, the following research questions were defined:

- were students from all schools able to express their knowledge by oral assessment better than they were able to complete written assessments on similar tasks?
- did students from low attainment schools possess a lower level of content knowledge than students from other schools?
- did students from schools characterised by rote learning and assessment have a lower level of process skills and content knowledge understanding than those from schools with authentic learning and assessment, even though written results were of a similar standard?

Chapter 7 reports on the comparison of oral and written assessments.

Chapter 8 recognizes that whatever insights of value might emerge from the programme of research the thesis requires in-depth conceptual analysis as well as consideration of field research findings.

Accordingly, in Chapter 8, a conceptual analysis of some of the major challenges involved in achieving curriculum recognition for PE are reviewed with new insights provided on how phenomenological approaches to teaching, learning and assessment could inform curriculum

planning. Finally, Chapter 9 concludes the thesis summarizing the main points and reporting on their implications for future practice.

Chapter Two: CURRICULUM INTEGRATION AND KNOWLEDGE REPRESENTATION IN PRACTICAL LEARNING ENVIRONMENTS

2.1. Introduction

This chapter analyses the influence curriculum integration and knowledge representation in practical experiential learning environments have on students' uneven levels of attainment in high-stakes examination awards in PE. To date, these influences have not been researched to any detailed degree, yet analysis of these influences appears crucial for understanding the possible reasons for students' typical attainment profile and for highlighting particular features of teaching and learning which could become the main analytical reference points for a programme of progressive research. Furthermore, as the research focus includes analysis of teaching as well as the quality of students' learning and assessment experiences it is necessary to review teaching and learning concurrently. Thus far, related research has often been limited through predominantly focusing on one or the other. Griffin and Placek (2001, p. 299) note that:

Research from both learning and teaching orientations complement each other, and eventually should provide a richer more holistic picture of what happens in the gym and thus a stronger basis for instructional practices that maximize quality physical education for all students.

2.2 Curriculum integration in physical education

Integration commonly centres on a 'powerful conceptual synthesis or unity between forms of knowledge and their respective disciplines' (Placek, 1996, p. 288). As such, integrated teaching approaches are intended to provide the holistic context for interactive learning of the form advocated by Dewey (1938), Piaget (1971) and Vygotsky (1978), where collaboration with peers and teachers provides the foundation for improving levels of learning and refining language skills.

Crucially, two forms of curriculum integration are typically depicted. There is internal integration where concepts which arise naturally and feasibly within identifiable subject boundaries are investigated. By contrast, a curriculum based on external integration would include concepts from different subjects being studied together. To date, analysis of the potential for external curriculum integration is more evident in PE (Laker, 2000; Laker, 2001). However, to address the central research question, the challenges of internal integration within subjects requires investigation.

Fogarty (1991) suggests that there are three types of skills which can be internally integrated: conceptual skills, thinking skills and personal-social skills. The focus of the thesis is predominantly on the first two. To date, it is analysis of the remaining area (personal-social skills), which has received most research attention in PE (McBride and Xiang, 2004). Hellison (1995; 1996), for example, has written widely on the potential development of students' self-responsibility in team environments and on the instructional strategies which teachers would require to adopt in order for meaningful reflection and discussion to occur. With regard to conceptual and thinking skills, Jonassen et. al. (1993) have described how the relationships between the two can be best understood by students if a clear learning structure is set out. In the context of examination awards in PE, such a relationship could involve students integrating together analysis work drawn from a variety of related disciplines with personal performance experiences drawn from a range of practical activities.

The potential of developing conceptual and thinking skills within integrated curricula in these types of ways has been noted by Siedentop (2002a) who has contrasted the unhelpful divergence in the ways tertiary education and secondary schools have responded to these challenges in recent years. In tertiary education there has been an expansion in the related disciplines of sport psychology, motor learning and biomechanics whereas within secondary schools a staple diet of multi-activity participation programmes has tended to be reproduced year-on-year. These differences may be due to the extent of the pedagogical challenges involved in delivering curriculum but may also indicate a

degree of inertia and preference for set routines by teachers within secondary schools (Curtner-Smith et. al., 2001). However, there is some recent evidence of greater experimentation; for example, Macdonald (2004) examined teachers' and students' reflections about the potential value of a mini Olympics festival with Year 8 (12 year old) students in Australia. The festival, which was based on an integrated curriculum model, was problematic to deliver due to the challenge of facilitating flexible timetabling - and more significantly in terms of this research - because some teachers had difficulties in changing their existing and preferred pedagogical approaches. Furthermore, many students felt deprived of purely practically-based PE time whenever other related tasks were involved, with one student commenting that 'I didn't like learning all the time. I wanted to do more practical' (Macdonald (2004, p.129). In summary, while enthusing about the rich potential for learning tasks within an integrated curriculum, Macdonald (2004) also cautions that curriculum integration can be contrived at times and an unwise idea.

2.2.1 Examples of curriculum integration in Physical Education

Until recently, the internal integration of concept and thinking skills has rarely been researched.

Placek (1996, pp. 292-293) noted that:

...almost no research has been done on this type of curriculum. We are left to ask, therefore, the most fundamental questions about integration. First, can students learn conceptual material in PE?.... Can concepts be taught without detriment to the development of psychomotor skills?...Will students use the conceptual material later in life?...What is the best way to teach concepts in different settings?.. Given the recent emphasis on conceptual skills by textbook authors and curriculum developers, questions such as these need answers.

Reflecting these needs, recent research has begun to address developments in student conceptions of fitness (Placek et. al., 2001), tactical problems in soccer (Griffin et. al., 2001) and the links between motor development and the acquisition of sport tactics involving active cognitive processing (Nevett

et. al., 2001). Placek and Patton (2002) investigated whether a group of 20 (12 girls, 8 boys) 4th grade students (10/11 years old) in a suburban school in northeastern USA were able to comprehend the principles of mechanics (specifically Newton's Laws) through an integrated PE curriculum. Students were capable of understanding and applying simpler laws. For example, it was noted that Newton's third law (for every action, there is an equal and opposite reaction) was consistently and correctly identified by students who could subsequently provide relevant applied suggestions e.g. 'to run faster you push back harder'. In contrast, for Newton's first law (inertia) only three students (15%) could name the law of inertia and for Newton's second law (force = mass x acceleration) students frequently developed alternate conceptions e.g. if an equal force is applied to two objects, the heavier object would have greater acceleration. Overall, results indicated that it was difficult for students to grasp from their practical experiences a sound understanding of Newton's laws as students could not go beyond a basic recitation of known facts and their conceptual appreciation was insufficient for later analysis of different actions. Placek and Patton's (2002) evidence highlights the care which is required when trying to integrate experiential learning with improvements in content knowledge understanding.

However, in each of the above examples (Nevett et. al., 2001; Placek et. al., 2001; Griffin et. al., 2001; Placek and Patton, 2002) a relatively limited performance environment was used. The focus appears too short and restrictive to generate a meaningful picture. These weaknesses have curtailed some of the wider ramifications that might be inferred from the attainment outcomes achieved by students and similar limitations are apparent in the study of metacognition in learning in PE by Luke and Hardy (1999). In addition, there has been a lack of internally integrated curriculum research where the appropriateness of the learning environment is considered alongside the level and complexity of content knowledge that is to be understood. With regard to Placek and Patton (2002), the pairing of practical activities and Newton's Laws of physics might appear rather opaque and separate unless it is clear to students the benefits of linking and applying knowledge of physics laws

with attempts to improve their level of practical performance. Without this linkage experiencing practical activities while at the same time learning about the principles of Newton's laws of physics could prove an overly complex and unproductive learning experience for students.

Research linking curriculum integration and thinking skills in PE has focused on the founding work of Bunker and Thorpe (1982) which developed the Teaching Games for Understanding (TGfU) model. Briefly, the TGfU model is designed to engage students in more authentic learning about how to play in, and understand, games. It seeks to achieve authenticity by developing students' appreciation of the nature of the game through enhancing their tactical awareness and decision-making within game-like situations. TGfU is advocated in preference to a technique first approach, where moving to fuller game situations is dependent upon being able to master different techniques first. TGfU has been commented on favourably in a psychomotor sense by various authors (Allison and Thorpe, 1997; Turner and Martinek, 1995) and by other authors with regard to the wider attitudinal benefits of participation (Capel, 2000; Werner et. al., 1996). By contrast, other authors (McMorris, 1998; Lawton, 1989) are less certain about the extent to which a TGfU model is better than a technique first approach. While related research is likely to continue in future years, findings are mostly beyond the direct scope of this particular thesis because the rationale for TGfU focuses predominantly on improving skilled performance in games rather than the understanding per se of any specific associated analytical abilities, which are eventually assessed by written examinations. However, TGfU research has been useful in highlighting the importance of focusing on the outcome benefits of linking personal performance with decision-making thinking skills in games, and for noting the importance of conveying these planned benefits to students and recording their learning impressions (Fleming, 1994).

2.3 Knowledge representation within Physical Education

Quite how knowledge can be more effectively represented in learning environments has recently become the focus of research, e.g. through Lingard's (2007) research on productive pedagogies. In many cases the intention has been that pedagogical improvements can increase students' engagement in thinking as well as connect with their interests, in and beyond, school. The ideas framing productive pedagogies developments include 'work from the sociology of education, critical readings of school effectiveness and improvement, socio-linguistic studies of classrooms, social psychology ... learning communities and constructivism ... and so on' (Lingard, 2007, p. 254). Despite a high degree of consensus for achieving these goals, various authors (Hartley, 2003; Ball, 2003) have indicated that the constraints teachers face when working towards precisely defined standards can result in a narrowing of the domain of learning and assessment with the pursuit of productive pedagogies becoming progressively less important as courses progress.

In trying to bring about pedagogical improvements within the context of new examination awards in PE, it appears of merit to firstly analyse teachers' values towards new examination courses. Various authors (Ennis, 1992a; Chen and Ennis, 1996) have stressed the importance of the link between teachers' value orientations, feelings of self-efficacy and subsequent pedagogical and assessment practices. In addition, teachers whose professional value orientations are underpinned by positive beliefs about the worthiness of a curriculum are more likely to attempt to teach awards in an authentic fashion (Ennis, 1994a).

As well as discussing the significance of teachers' beliefs / values and their influence on teaching, learning and assessment, the scale of the pedagogical challenges involved in deploying curriculum arrangements indicates that reviewing the breadth and depth of teachers' content knowledge expertise is also required. When reporting on the Queensland School Reform Longitudinal Study (QSRLS), an initiative based on identifying productive pedagogies, Lingard (2007, p. 251) notes

that there was an ‘assumption that particular teacher threshold knowledges are central to effective teacher pedagogies’ and furthermore that ‘authentic instruction requires higher order thinking, deep knowledge, substantive conversations and connections to the world beyond the classroom’.

However, due to the newness of examination awards in PE, where so many teachers may well have been in post before awards began and where familiarity with new content knowledge may well have played little part in initial teacher education programmes, it seems unwise to proceed with assumptions that teachers necessarily possess adequate content knowledge expertise, especially given the influence this is likely to have on whether or not productive pedagogies are adopted.

As noted above, there is a presumed link between teachers’ content knowledge expertise and the sophistication of the teaching methodologies subsequently deployed. With this link in mind, it appears that teachers’ curriculum decision-making is also worthy of analysis, especially as within new examination awards in PE it is expected that teachers will use constructivist-based (indirect) teaching approaches rather than more familiar reproductive teaching approaches. Lingard (2007) was also alerted to the need to link productive pedagogies with productive assessment. Therefore, researching the connections between teachers’ pedagogical approaches and the authenticity with which students complete their assessment answers would be important as within examination awards in PE it is expected that students can connect their own personal learning experiences with selected content knowledge.

As well as researching the specific links between content knowledge and curriculum decision-making it is important to analyse the relationship between pedagogies and knowledge. This relationship has often been referred to as pedagogical content knowledge and includes knowledge of general management strategies as well as the content knowledge required within specific subjects (Shulman, 1986). The combination of the two abilities (general management strategies and content knowledge) provides a foundation for teachers to make ideas accessible to students. For example,

Shulman's theoretical framework (Model of Pedagogical Reasoning) emphasizes the importance of content knowledge within the teaching process in helping to guide the direction of students' learning and for providing academic and social support on how each student can learn the specific concepts and topics required (Shulman, 1987). Accordingly, Shulman (1987) describes a cycle of activities that are fundamental for effective teaching (comprehension, transformation, instruction, evaluation, reflection, and new comprehension) as they highlight to students necessary curriculum literacy skills and indicate as well how specific performance criteria linking content knowledge with formative assessment procedures have been developed and made explicit.

However, the adequacy of this explanation of effective teaching has been criticized by Banks et. al (1999, p. 91) on the basis that it represents 'an essentially objectivist epistemology', which lacks adequate flexibility for interpreting the multiple influences on the ways in which learners learn. Consequently, there might be an over privileging of content knowledge relative to considerations of how content knowledge can best be understood and responded to by learners. Given the newness of examination awards in PE and the likely variations possible in the ways policy arrangements are deployed (e.g. according to specific school circumstances and in terms of how teachers' make curriculum decisions) a more dynamic and multi-dimensional model for analysing the links between teaching and learning is required.

With similar ambitions in mind, QSRLS identified four dimensions for trying to interpret productive pedagogies and productive assessment (Table 1). The dimensions were created following statistical analysis of teacher observations (250 teachers each observed on four occasions). The four dimensions are: Working with and valuing of difference; Intellectual quality; Connectedness and Supportiveness. Each of these dimensions branched into a further five elements with the overall intention being that the constructed nature of knowledge and 'collectivist approach to learning'

(Lingard, 2007, pp.254-255) are reflected in the various perspectives highlighted between productive pedagogies and productive assessment (Table 1).

Table 1: Relationships between productive pedagogies and productive assessment

Dimensions	Productive pedagogies	Productive assessment
Working with and valuing of difference	Cultural knowledge	Cultural knowledge
	Active citizenship	Active citizenship
	Narrative	
	Group identities in learning communities	Group identities in learning communities
	Representation	
Intellectual quality	Problematic knowledge	Problematic knowledge: construction of knowledge
	Higher-order thinking	Higher-order thinking
	Depth of knowledge	Depth of knowledge: disciplinary content
	Depth of students understanding	Depth of knowledge: disciplinary processes
	Substantive conversation	Elaborated written communication
Connectedness	Connectedness to the world beyond the classroom	Connectedness: problem connected to the world beyond the classroom
	Knowledge integration	Knowledge integration
	Background knowledge	Link to background knowledge
	Problem-based curriculum	Problem-based curriculum
Supportiveness	Students' direction	Students' direction
	Explicit quality performance criteria	Explicit quality performance criteria
	Social support	
	Academic engagement	
	Student self-regulation	

In reviewing the work of Lingard and others there are close commonalities between the intentions of the QSRLS dimensions of teaching and the intentions planned for the current research. This has led to four central features of teaching, learning and assessment being identified as the basis for initial research. The four central features also include students’ learning and assessment experiences, as these are recognized as vital to include for a more complete analysis of examination awards in PE. The summary statement below defines the four central features and bracketed alongside these for comparative purposes are the four intentions of the QSRLS dimensions of teaching.

- teachers orientations (beliefs / values), about the merits of an internally integrated curriculum and how beliefs link to students’ own expectations and attitudes (Working with and valuing of difference)

- knowledge expertise, and how expertise links to students developing their own knowledge base (Intellectual quality)
- curriculum decision-making, and how decision-making links to students' engagement with the learning process (Connectedness)
- pedagogical content knowledge, and how this links to students' discussions about self-esteem and motivation (Supportiveness)

The links between the four central features and the four intentions of the QSRLS dimensions of teaching are particularly strong when considering the relationship between teachers' knowledge expertise and the development of students' intellectual quality; teachers' curriculum decision-making and students' connectedness with the learning process and teachers' pedagogical content knowledge and students' self-esteem. The links between teachers' orientations (beliefs / values) about examination awards in PE and students' identities within group learning environments are less clear than for the other three dimensions due to the focus of productive pedagogies analysis being more orientated towards improving students' active citizenship, relative to the focus within a high-stakes examination award context, where there is more of a premium on working collaboratively together with other students on particular learning tasks. Nevertheless, it is beneficial to recognize in general that the nature of the personal commitment and sincerity shown by teachers towards teaching in productive ways is likely to influence how students react and engage with learning environments.

Griffin et. al., (1996) have noted that in related areas of PE research, such as initial teacher education, there is evidence of research which includes each of the four identified central features of teaching, learning and assessment previously identified. However, with regard to high-stakes examination awards in PE, research has yet to occur with such a focus. This appears due to the limited pursuit of research which analyses the inter-related importance of each of the four central

features. For example, within Kirk and Macdonald's (1998) monograph on 'Situated Learning in Physical Education' there is a detailed discussion of the importance of students' active engagement in the learning process and teachers' curriculum decision-making when constructing learning environments. However, there is a less than full operational account of how a curriculum framed by these imperatives would support student learning and be evaluated and reflected upon by teachers. Consequently, there is often difficulty in understanding more fully what Dodds (1999, p. 227) refers to as the 'big picture' when researching integration issues in PE. With a view to addressing these limitations, this research attempts to help in the quest for a more meaningful picture of teaching, learning and assessment in action through analysing each of the central features and their influence on the planning, delivery and evaluation of curriculum.

2.4 Teachers' orientations (beliefs / values)

This section discusses theoretical considerations relating to the links between teachers' orientations (beliefs / values) and their pedagogical and assessment practices. The link between the two is important, for as Humes (2003, p. 84) notes:

Teachers can be provided with all the kinds of support and staff development to acquaint them with the requirements of new programmes – but that is not enough. They need to be convinced that the reforms which they are asked to implement are sound in principle and consistent with their own professional standards and values.

Furthermore, the inter-relationship between teachers' beliefs and the other three central features of this research: knowledge expertise; curriculum decision-making and pedagogical content knowledge are widely acknowledged (Ennis, 1992a; Ennis, 1994a; Graber, 1995; Chen and Ennis, 1996; Behets, 2001). However the links between beliefs and teaching, learning and assessment practice can often vary and lack internal consistency, to the extent that teachers can sometimes exercise 'knowledge disavowal' (Ennis 1994a, p.164), where teachers deliberately reject information which

could bring about effective changes in curriculum decision-making practice. The length of time teachers have been teaching is often an important factor to consider. As Ennis (1994a, p.128) notes 'beliefs held and reinforced over a long time period increasingly act as a form of knowledge.' Accordingly, the importance teachers attach to the motivation levels of students, the areas of content knowledge they select for analytical purposes and the authenticity they demand from assessment answers are all likely to be indicators of teachers' underpinning professional beliefs and indicative of how teachers reflect on the adequacy of their teaching role.

Problematically, Ennis et. al. (1992a) note that teacher beliefs (as expressed through value orientations) are often resistant to change and indicate that while some teachers will go to great lengths to try to implement new curriculum (if their beliefs match curriculum aims) other teachers will go to similar lengths to avoid changing their curriculum decision-making, even when there is considerable evidence of potential learning benefits. For example, teacher complaints about the adequacy of teaching resources or of students' weaknesses in grasping the detailed understanding necessary to pass can ensure that teachers' feelings of self-worth remain intact, as they do not perceive themselves as being directly accountable for any lack of student learning. Knowledge disavowal can also extend beyond general teaching concerns (e.g. large class sizes and poor facilities) to more fundamental conceptual issues, for example, beliefs about whether it is possible to adopt a practical experiential rationale within a high-stakes examination award or not. However, if there was evidence that the rationale was undeliverable then doubting teachers would be exercising legitimate 'knowledge disavowal'.

Faucette (1987) classifies teachers' beliefs as assimilators, conceptualisers or resisters. In the current context, assimilators would agree with the rationale for a curriculum innovation and possess the required level of content knowledge expertise to make effective curriculum decisions. Conceptualisers would agree with the rationale, but would not possess the required level of content

knowledge expertise to make effective curriculum decisions without further assistance. Resistors would view the rationale as inconsistent with their current beliefs and would cite a variety of factors (facilities, resources and student ability levels) as reasons why the proposed curriculum innovation would not work within their school setting.

2.4.1 Value Orientation Inventory

Prompted by extensive changes to the PE curriculum in schools, Ennis and Hooper (1988) designed a Value Orientation Inventory (VOI) framework for categorizing differences in PE teachers' beliefs (Ennis et. al., 1990; Jewett and Ennis, 1990; Ennis and Zhu, 1991; Ennis 1992b; Ennis, 1994b; Ennis et. al., 1992a; Ennis, et. al., 1992b). The inventory is considered capable of illuminating the beliefs of different categories of teachers, for example, teachers in urban and rural settings (Ennis and Chen, 1995), teachers employed within cross-cultural schools (Chen et. al., 1997) as well as pre-service and in-service teachers (Pissanos and Allison, 1993; Solmon and Ashy, 1995; Behets, 2001). The five different orientations of the VOI are 'Disciplinary Mastery'(DM), 'Learning Process' (LP), 'Self-Actualization' (SA), 'Social Reconstruction' (SR) and 'Ecological Integration' (EI) and these are measured to establish their priority relative to each other. Results are then referenced against the influences of school programmes, socio-economic considerations, teachers' sporting and school backgrounds and such like (Ennis and Hooper, 1988).

Research has shown that teachers who are most inclined towards disciplinary mastery value proficiency in performance and knowledge about performance, which is informed primarily from a scientific perspective through a focus on skills, fitness and biomechanics. This is the dominant orientation of student teachers of PE and is likely to be dominant among many practising teachers as well (Ennis, 1992a). Teachers who value highly the learning process recognize the benefits of problem solving and of applying new learning to existing knowledge. Consequently, teachers with this preferred belief have their teaching informed by constructivist ideas. Teachers, most disposed

towards self actualization emphasize the importance of students' self-growth being fostered through the curriculum. As such, content can be changed regularly and adapted to suit student needs, a situation that does not occur within disciplinary mastery, where the focus on content and its transmission and mastery is highly valued. Advocates of self actualization emphasize the contribution of PE in enhancing self-responsibility and in improving awareness of the well-being of others (Hellison, 1996). Social reconstruction proponents highlight the potential of PE to inform social change and these types of developments could occur, for example, through the opportunities provided in Sport Education type units of work (Siedentop, 1996), where students take on many different roles (organizer, coach and referee) in addition to performing. Unlike other orientations, which centre on one particular educational influence, ecological integration tries to emphasize the dynamic inter-relationship between the different orientations in shaping teachers' beliefs.

One outstanding research concern is the extent to which teachers' relative preference towards different value orientations changes in accord with prevailing curriculum guidelines. The extent to which such changes occur is especially important when researching how experienced teachers are expected in mid-career to begin teaching a range of new examination awards as well as continuing with the delivery of more familiar classes. Specifically, teachers with high disciplinary mastery and learning process ratings appear best placed to work on courses which require curriculum integration and knowledge representation in practical learning environments. By contrast, high social reconstruction and self actualization ratings link to the benefits of an integrated curriculum, but only when the focus is almost exclusively on personal and social skills rather than conceptual and thinking skills.

2.4.2 Related research using the Value Orientation Inventory

One of the largest and most detailed studies using the VOI was by Behets (2001) who collected data from 637 secondary school PE teachers and 274 students completing initial teacher education programmes in Belgium. Behets (2001) was keen to measure teachers' value orientations at a time when changes to curriculum placed an increased emphasis on self-esteem and social development. Descriptive analysis indicated that SR orientations scored highly. The hypothesis by Behets that DM would dominate goal orientations was not borne out. The high SR orientation indicated coherence between curriculum objectives and the value orientations of teachers. Behets (2001) also found that there were no discernable differences between the VOI of male and female teachers. Overall, the evidence indicated that in some circumstances teachers' beliefs can appear to change in accord with prescribed curriculum guidelines. Given the sustained nature of the attainment imbalance evident within Scottish examinations in PE (SEB, 1996; SEB, 1997a; SQA, 1998b; SQA, 1999b; SQA, 2000b; SQA, 2001b; SQA, 2002b; SQA, 2003b) it would be useful to ascertain whether teachers' values about examination curricula have changed or not over recent years. However, currently, there are no baseline data on teacher beliefs which could help inform this research. Therefore, it is not possible to track changes over time and make comparisons of teachers' beliefs. Nevertheless, it is still a necessary task for the current research to analyse teachers' beliefs towards examination awards as these awards have now been an established part of the curriculum for nearly two decades.

2.4.3 Value Orientation Inventory and links to the other central features

Research by Ennis et. al. (1992b) links findings from teachers with DM and LP value orientations with the three other central features considered in this thesis. Ennis et. al. (1992b) report that teachers aiming to improve standards of performance and understanding of performance related concepts used reproductive teaching approaches most. However, by selecting these teaching approaches the capacity for achieving the problem solving emphasis within LP was more difficult to realize than if productive teaching styles were chosen. These findings were among the first evidence

to indicate that achieving DM (performance) and LP (problem solving learning) objectives concurrently (for example, through an internally integrated curriculum) might be difficult even though some teacher populations have value orientations which are geared towards achieving these objectives. Furthermore, Ennis et. al. (1992b) argued that if we expect teachers to reflect on their own teaching and students' learning experiences, analysing pedagogical content knowledge is important given the complexity of attempting to improve levels of student attainment in the short term while at the same time trying to improve students' thinking skills and reflections on learning processes in the longer term.

2.4.4 Value Orientations and the Physical Education profession in Scotland

In the Scottish context, the only recent research which has measured teachers' value orientations was a nationwide study of Principal Teachers' attitudes completed by Sharp in the late 1980s (Sharp, 1990). The study was based on an earlier model (Kane, 1974) and attempted to provide a representative portrayal of teachers' aims and values. It reviewed teachers' thoughts about the benefits of different activities, the introduction of examination awards and evaluations of the existing curriculum. Sharp (1990, p. 54) found a close relationship with Kane's earlier findings, where teachers valued motor and physical development most highly and commented that 'It is clear that the physical education profession knows precisely what it is trying to achieve' before venturing that 'Perhaps a single effort should be made to inform everyone (parents, governing bodies, local authorities etc.) what are the aims of physical education and then the subject should be laid to rest!' Given the complex and contrasting nature of much of the value orientation evidence already presented this analysis is somewhat superficial. Regrettably, no similar studies have occurred in Scotland since 1990.

2.4.5 Implications for research

This review has highlighted the merits of analysing the degree of coherence between teachers' beliefs and curriculum goals in setting the framework for analysing the effectiveness of curriculum implementation, delivery and evaluation.

2.5 Knowledge expertise

Unsurprisingly, research has shown that expert teachers are more likely to draw upon a depth of content knowledge expertise which is richer and more extensive than novice teachers (Ennis and Zhu, 1991; Housner and Griffey, 1985; Griffey and Housner, 1991). One particular benefit of such expertise is that greater recognition of individual student abilities within whole class settings is possible (Woods, 1996). Whether expert teachers of PE draw most on content knowledge expertise which is based on their own sporting performance and coaching background (Amade-Escot 2000; Pieron and Carreiro da Coasta, 1996), or from some transferable form of pedagogical content knowledge (Shulman, 1986) is still unclear.

Following European based research studies, Pieron and Carreiro da Coasta (1996) indicated that teachers' activity specific expertise is reflected in the motor ability improvements of students, the motivation of students for learning and the suitability of content matter selected for teaching. By contrast, many North American studies tend to support arguments about the transferability of knowledge expertise across different cognitive areas (Dodds, 1994). Consequently, the cognitive devices expert teachers use as part of their professional practice to enhance student learning are of interest. Shulman (1987, p. 8) refers to expertise as '...that special amalgam of content and pedagogy that is uniquely the province of teachers, their own special form of professional understanding.' Two expertise factors appear important; firstly the content knowledge (subject matter) expertise teachers possess and secondly the more general pedagogical content knowledge expertise teachers possess as evidenced by knowledge of curriculum and an understanding of

students. The remaining part of 2.5 focuses on the first of the two factors mentioned, namely content knowledge expertise and pedagogical content knowledge which is analysed in 2.7.

2.5.1 Content knowledge expertise

While the contrast between expert and novice teachers has been generally useful in examining pedagogical differences, research on the specific components of content knowledge expertise is less evident. Berliner (1986) began trying to understand more about the influences of teachers' content knowledge expertise on subsequent cognition and actions, and in one of the few related research studies Hashweh (1987) reported on the influence of three expertise factors when discussing biology and physics teaching. These expertise factors were, firstly, that expert teachers had a greater knowledge of concepts and were able to integrate topics within respective disciplines more effectively than non-expert teachers. Secondly, expert teachers were able to use a broader range of teaching approaches, for example, through using a greater number of models, demonstrations and analogies, and by modifying textbook content and asking questions that required synthesis. Conversely, less knowledgeable teachers closely followed textbooks and predominantly asked recall questions. Thirdly, understanding of each student's relative grasp of disciplinary concepts was better understood by expert teachers. Based on the importance of these findings for analysing the quality of students' learning and assessment experience, the three factors cited (greater teaching effectiveness, more varied teaching approaches and analysis of students' understanding) are now further discussed.

2.5.2 Content knowledge expertise within Physical Education

Firstly, with regard to teaching effectiveness, there has been a recognition for some years that a 'major flaw in early effectiveness research was the absence of a focus on teacher content knowledge as a salient variable in understanding effectiveness' (Siedentop, 2002b, p. 432). One of the few relevant PE studies was by Schempp et. al. (1998) which, when researching the characteristics of

expert teachers identified the particular importance of teachers' own performance involvement and knowledge of different sporting activities. These findings reflect those of Pieron and Carreiro da Coasta (1996) and Amade-Escot (2000) in highlighting the importance of content knowledge expertise which is mostly derived from teachers' own sporting performance and coaching background. For as Schempp et. al. (1998, p. 353) comment:

...a physical educator's level of professional competence is not a generalised measure, but rather must be sensitive to the subject matter being taught. The same teacher who may be proficient at teaching fitness activities may be woefully lacking when it comes to teaching racket sports. The content areas of physical education, and the expectation for teachers attempting to convey that content, must be carefully considered by curriculum committees, teacher educators and administrators.

Schempp et. al.'s (1998) findings highlight some of the operational difficulties of a curriculum design model where negotiation of activities between teachers and students is encouraged.

Secondly, Hashweh (1987) found that expert teachers were more able to use a varied range of teaching approaches than non-expert teachers and design differentiated tasks for students of different abilities. However, within PE, Schempp et. al. (1998) found that expert and non-expert teachers alike tended to assume that learners had little relevant prior experience of different activities. The resulting evidence of reproductive rather than productive teaching approaches being adopted links with earlier evidence of how difficult it might be in practice to pursue DM (performance) and LP (problem solving learning) objectives together (Ennis et. al., 1992b).

Thirdly, expert teachers appear able to analyse students' understanding and ensure that each student has a clear conceptual grasp of disciplinary concepts (Schempp et. al., 1998). In developing such expertise, teachers are concerned about levels of student motivation and consider that if learners are

motivated then most learning difficulties can be overcome through deploying a range of varied teaching approaches (Griffey and Housner, 1991). However, expert teachers' desire for 'flexible control' which leads them to 'search for unique and innovative ways of presenting topical information' (Schempp et. al., 1998, p. 351) might be a particularly demanding remit to realize within high-stakes examination awards given the methodological challenges of achieving DM and LP objectives concurrently, for example (Ennis et. al., 1992b).

Within this general area related research much of the research has focused on the structural representation of knowledge, with attention centering on cognitive architecture and cognitive mapping (Amade-Escot, 2000). Research developments in these areas have often been conducted in conjunction with expert and non-expert teacher studies (Griffey and Housner, 1991) with resulting explanations often distinguishing between declarative and procedural forms of knowledge (Anderson, 1990).

2.5.3 Declarative and procedural forms of knowledge

Declarative knowledge is often characterized by the awareness of 'knowing that', which helps teachers to define content knowledge (Anderson, 1990, p. 22). When combined with further structural information, the resulting procedural knowledge forms the basis around which knowledge is applied (Abraham and Collins, 1998). The nature of the interaction between the two is important for the effective representation of relevant concepts. Crucially, procedural knowledge becomes contingent upon clear declarative knowledge foundations, as in an integrated curriculum, for example.

There has been some research into the part critical reflection plays in developing content knowledge expertise for trainee teachers (Mergendoller and Sacks, 1994). However, with few exceptions (Schempp, 1993; Schempp et. al., 1998) little research has taken place on the influence of changing

levels of expertise of experienced teachers in post. Furthermore, the limited research which does exist tends to make general connections between the benefits of content knowledge expertise and pedagogical content knowledge rather than seeking to explain what the specific benefits of gaining greater content knowledge expertise might be. Accordingly, while it is useful to recognize that teachers with an expert level of content knowledge expertise are generally 'better able to plan lessons that are richer in activities [and] to develop contingency plans that accommodate classroom variations' (Schempp et. al., 1998, p. 354) there is still a need to understand more about content knowledge expertise. This could potentially be achieved by examining learning from students' perspectives as this represents a further method for analysing the influences of teachers' content knowledge expertise on practice. Accordingly, analysis of declarative and procedural forms of knowledge and their link to levels of student learning follows.

2.5.4 Declarative and procedural forms of knowledge and student learning

McKeachie (1998) contrasted high and low achieving students and noted that more able students used a greater range of cognitive approaches when applying content knowledge. It appeared that declarative knowledge was effective in enabling students to translate their understanding into procedural knowledge. These abilities helped students when problem solving, a key component of practical experiential learning. To aid the improvement of the learning processes involved in problem solving Jonassen et. al. (1993) promoted the idea of structural knowledge to explain to students the ways in which different concepts are related. Thus, structural knowledge can be used as a connector between 'knowing that' (declarative knowledge) and 'knowing how to' (procedural knowledge) in order for students to eventually understand 'why'. Different methods are available for the development of structural knowledge, however in many curriculum awards modest use has been made of these methods (Jonassen, et. al., 1993). One possible method for conveying structural knowledge is through using concept maps. These are designed to help students comprehend the overall idea of a course and can be used for improving student reflections about their learning

experiences and for identifying future learning goals.

Zeitz and Spoehr (1989) indicate that a broad-based approach to problem solving enhances the development of declarative knowledge, which can then be effectively proceduralised later by students. Such broad-based approaches are in preference to a depth-based approach to problem solving where a single (correct) form of answer is sought. Zeitz and Spoehr (1989) argue that while depth-based approaches can be productive and suitable in the exact sciences, they are of less value in the non-exact sciences. The authors found that students who received the same declarative instruction in a breadth-first problem solving lesson climate performed better than those who received the same declarative instruction in a narrower depth-based problem solving lesson. Subsequently, Abraham and Collins (1998, p. 72) argued that 'The breadth-first method ...is thought to be a better method for the delivery of information when there is no easy route to solving problems', as is likely to be the case within an integrated high-stakes examination award in PE, for example.

The implication for the teaching of examination awards in PE is that teachers should review carefully how best to merge content knowledge with students' practical experiences in activities, because without these learning foundations the benefits of integration will be poorly retained and rarely transferred to new challenges. Similar concerns are evident in TGFU where, for example, if students are carrying out a restrictive pre-planned tactic then these types of teaching and learning approaches are contrary to the desired outcome of students possessing a greater and more flexible understanding of the range of factors which can influence the effectiveness of different strategies in and during games (McMorris, 1998).

2.5.5 Declarative and procedural forms of knowledge and integrated curricula

In commenting on how procedural knowledge and declarative knowledge should be delivered (in a sports coaching context) to produce transferable knowledge, Abraham and Collins (1998) stress the importance of allowing adequate time for learning to occur as this enables students' declarative understandings to develop during practice. When outlining the assessment ramifications of the breadth-first delivery approach advocated, Abraham and Collins (1998, p. 76) state that:

Although there may be resistance to the idea, a written assessment of some sort may provide an effective, standardized, and objective solution. While this method allows declarative and procedural to be assessed in timely fashion, it also has the added bonus of motivating and directing candidates to learn both procedural and declarative knowledge.

Overall, research evidence suggests that students' content knowledge understanding is most likely to improve in learning environments where procedural knowledge links and builds on clear declarative knowledge foundations, and where individual as well as group needs are considered (Griffey and Housner, 1991; Schempp et. al., 1998). By implication these types of learning environments are preferable to separating practice and theoretical aspects of learning because if such separation occurs, confusion could exist if, for example, declarative knowledge is pursued in detached class based settings following earlier attempts at applying procedural knowledge in practical learning environments. This is due, in part, to the normal ordering of declarative knowledge leading to later procedural knowledge application having been reversed.

This short review has indicated the importance of knowledge expertise within an integrated curriculum and some of the probable antecedents of expertise in terms of achieving a coherent link between declarative and procedural knowledge. It has also highlighted the probable benefits of adopting a breadth-first approach to problem solving as well as the importance of recognizing that learning through practical experiential approaches takes time and this requires to be recognized

when framing a curriculum. Thus, there is a range of factors which add to the complexity of mastering this form of teaching. In addition to the knowledge expertise factors just mentioned, earlier reporting has also highlighted the importance of teachers considering the appropriateness of content knowledge chosen (Macdonald, 2004) and of contemplating how new knowledge can be applied (Placek and Patton, 2002).

2.5.6 Implications for research

In highlighting the importance of teachers' value orientations and knowledge expertise and their subsequent effects upon curriculum decision making, Ennis (1994a, p.175) states that:

Curricular expertise is manifest in a clear understanding of declarative and procedural knowledge braided with a belief system that facilitates the when and why decisions critical to curriculum decision making. It reflects the teacher's ability to make contextually appropriate decisions about students and the knowledge base when planning and teaching.

Thus, consideration will now move on to focus on the important issues which appear to affect teachers' abilities to make contextually appropriate judgements as part of their effective curriculum decision-making.

2.6 Curriculum decision-making

The effect of curriculum decision-making upon teachers' pedagogical and assessment practices is the third central feature analysed. Three distinct factors influencing curriculum decision-making are considered: the teaching approaches adopted by teachers; structural learning developments and how individual and group targets are identified.

2.6.1 Teaching approaches and curriculum decision-making

The 'Spectrum of Teaching Styles' developed by Mosston (Mosston, 1966; Mosston and Ashworth, 1994) outlined the potential of different teaching approaches for achieving different learning objectives and was regarded by many as 'the most significant advance in the theory of physical education pedagogy in recent history' (Nixon and Locke, 1973, p.127). Mosston (1966) argued that the defining difference between reproductive and productive teaching styles was whether or not students have crossed the discovery threshold and accepted additional learning responsibilities in lessons. Evaluation of the teaching styles spectrum is based on analysing whether it is the teacher or student who is making the planning, delivery and evaluation decisions as learning progresses.

Since the 1960's, the effectiveness of different teaching styles has been researched extensively with most studies comparing teaching approaches with students' learning outcomes. Much research focussing on the reproductive cluster of teaching styles has reported on the benefits of the practice style for the acquisition of skill (Mawer, 1999). The practice teaching style is characterized by teacher demonstrations of skills and techniques, with learners having time to practise the task assigned and teachers providing individual and group feedback as necessary. The practice style of teaching would clearly suit a teacher whose value preference was for disciplinary mastery objectives (Ennis and Hooper, 1998). By comparison with the range of research analysing reproductive teaching styles there has been a dearth of research studies analysing productive teaching styles. In a wide ranging review of teaching styles research, Mawer (1999) only references three small-scale research studies which have involved productive teaching styles, and all of these only involved a low number of elementary age pupils. Therefore, past research on teachers' curriculum decision-making when using productive teaching styles in high-stakes examination awards is extremely limited.

Some authors have used descriptive statistics to comment on teacher preferences for reproductive teaching styles. Curtner-Smith et. al. (2001) in their analysis of teaching styles deployed in the National Curriculum for Physical Education in England and Wales, found that teachers spent up to 74% of their time in teacher directed practice (reproductive styles) with a maximum of 7% of their time in more shared problem solving (productive style) teaching environments. Curtner-Smith et. al. (2001) indicate that teachers' use of reproductive teaching styles is primarily determined by environmental factors including the possible disruption to class behaviour which exists when shifting decision making in learning to students and occupational socialization factors, e.g. the influences of teachers' own activity backgrounds, teacher education experiences and current teaching colleagues.

One of the adverse consequences of relying on evidence from research on reproductive teaching styles is that student experiences of learning remain poorly understood (Rink, 2001; McBride and Xiang, 2004). Thus, research which investigates students' social interaction and shared discussion when learning and how individual students reflect on their learning experiences is required (Chaiklin and Lave, 1993). Consequently, in order to highlight the precise links between teaching and learner engagement, an analysis of related structural learning issues follows.

2.6.2 Structural learning considerations and curriculum decision-making

Cleland and Pearse (1995), in a year long study of a middle school PE programme, considered that reproductive teaching approaches are best deployed for initial practical performance improvements. Thereafter, productive teaching approaches are best if problem solving and critical thinking abilities need improvement. However, as yet, there is little supporting evidence that this ordering of teaching approaches would be effective when integrating performance with related knowledge and understanding in high-stakes examination awards. Thus, key questions remain about how teachers

can effectively organize their curriculum decision-making to bring about the type of teaching and learning benefits intended within these types of award.

When addressing similar structural learning issues, Watts and Bentley (1991) identified ‘strong’ and ‘weak’ forms of constructivism. Strong constructivism is underpinned by a deeper understanding of structure and organization, which enables students to go beyond the information provided when answering questions. However, when commenting upon the extent to which strong constructivist teaching approaches existed in the National Curriculum in England and Wales, Watts and Bentley (1991, p. 175) commented that it barely existed as the authors had found instead ‘something we might call convenient constructivism’. This ‘weak’ form of constructivism is characterized by notions such as ‘starting from where the learner is at’ and the teacher acting as a ‘facilitator’ (Watts and Bentley, 1991, p. 172); approaches which appear to lack the required precision. Accordingly, the curriculum decision-making of teachers has to consider not only the teaching approach which is most appropriate to adopt with groups of students but also the decision-making required to improve each student’s comprehension of course structure and accompanying personal learning targets.

2.6.4 Setting individual and group targets and curriculum decision-making

With meeting these types of challenges in mind, Perkins (1992) developed the concept of ‘Teaching for Understanding’ (TfU) as a method for improving the links between teachers’ curriculum decision-making and the teaching, learning and assessment process. The main goal of TfU is that students learn to apply their understanding better in a performance context. Acquiring mental representations of skills and knowledge is by itself not enough to help students benefit as learners in the longer term. TfU emphasizes the importance of teachers setting clear overarching learning goals for students and including in their teaching frequent reminders of how topics and concepts link together; both of which appear critical considerations within an integrated curriculum in examination PE awards, where reminders about the anticipated constructive merging of students’

performance experiences with associated content knowledge are likely to be required to help students comprehend overall learning goals. In addition, TfU through its assessment focus on students expressing an informed personal viewpoint appears to suit the circumstances of examination awards in PE where insights from experience are designed to blend with knowledge of related concepts.

However, Entwistle and Smith (2002, p. 325) indicate that Perkins' TfU framework might lack the precise definition required because the framework:

... does not explicitly address student thinking; nor does it seem to offer a sufficiently active role for the teacher, once the curriculum has been set up...Learners may need help in seeing that understanding is part of the exercise, and in grasping what understanding really involves in a discipline.

It could be that the problems of weak constructivism will reappear (Watts and Bentley, 1991), with differences existing in the effectiveness of teachers in shaping students' understandings about how content knowledge links to learning aims, assessment procedures and national standards of attainment. In attempting to avoid such pitfalls, Entwistle and Smith (2002) developed a conceptual model which links teachers' 'target' understandings with students' 'personal' understandings. Smith (1998) developed the notion of target understanding after reviewing literature about how teachers interpret syllabus notes from their own perspective and use this as the basis for asking students questions. This process involved analysing how students interpreted particular contextual learning problems as well as the plethora of other school-related factors which can influence how students develop their personal understandings, e.g. their motivation and degree of engagement with the learning process and their interpretation of what the teacher expects as a response.

The model which they developed was informed with specific reference to the Higher Biology syllabus in Scotland; a high-stakes school examination award that covers set topics as well as providing opportunities for students to choose questions which require an extended response answer. Smith (1998) highlights that when faced with these types of curriculum challenges teachers should construct a 'target understanding' for their students, which is matched by students' own 'personal understanding' of teachers' target understandings. The model is premised on the notion that the closer the two targets are together the better, while also specifying that teachers should link their target understandings with formal assessment procedures in ways which recognize that rich teaching and learning environments are imperative for authentic achievement.

Within these types of rich learning environments, Wyatt-Smith and Cumming (2003) advise that it would be advantageous if teachers monitored students' understanding of specific terminology and use of language carefully. These views reflect findings from Elkins (2001, p.132) who found with a Senior Chemistry class in Australia that teachers' written equations on the blackboard represented a text that is 'not complete or fully explicit, and the students need to be able to follow the teacher's talk to understand the material' in an individually legitimate way. Regarding how best to put these types of ideas into practice in national examination awards, Entwistle and Smith (2002, pp. 337-338) advise that 'It would be relatively easy for examination boards to ensure that grade-related criteria set a more demanding target of integrative understanding to achieve a top grade.'

2.6.5 Implications for research

This review has highlighted the importance of teachers' curriculum decision-making when analysing the overall effectiveness of teachers' pedagogical and assessment practices. In particular attention has centered on how teachers' curriculum decision-making influences the viability of strategies for merging teaching targets with students' learning targets, and of helping students understand how learning is represented and formulated. In progressing with this line of analysis, the

final central feature (pedagogical content knowledge) is now discussed as this feature of teaching and learning has a particular focus on ‘...ways of representing and formulating the subject that makes it comprehensible to others’ (Shulman, 1986, p. 9).

2.7 Pedagogical content knowledge

Much of the pedagogical content knowledge research has (in ways similar to research on levels of knowledge expertise) analysed differences between expert and novice teachers. In a review of research findings, Brophy and Good (1986) described how many lessons by expert teachers were characterized by matching content knowledge with students’ capabilities and existing knowledge, and by the active role teachers took within classrooms. Thus, as well as content knowledge expertise, expert teachers are likely to build up a complex network of schema that includes all parts of the teaching process e.g. class management, comprehending how each student is progressing and setting learning goals accordingly. Overall, this type of expertise is a valuable source of feedback for teachers as they reflect on the efficacy of their teaching and learning (Leinhardt and Greeno, 1986). When analysing expert teachers, Brophy and Good (1986) have noted that such teachers placed an emphasis on highly structured lessons with ongoing reviews of students’ progress occurring. Furthermore, there was frequent use of questions, with expert teachers confident at answering any difficult questions students might pose. Most questions asked by the teacher were drill type repetitive questions with only a few open-ended questions asked. This helped ensure that the central focus in lessons remained clear and apparent to students and that teachers were familiar with exactly what students understood.

Despite agreement about the general characteristics of pedagogical content knowledge and its advantages for achieving excellent teaching, it is only relatively recently that research has linked student outcome data to reviews of pedagogical content knowledge and teacher effectiveness in high-stakes school examination awards (Mortimore, 1998). Ayers et. al. (2004) observed and

interviewed a group of 19 teachers who were identified as achieving best practice teaching as well as securing the highest levels of authentic assessment (top 1%) in the Higher School Certificate (HSC) in New South Wales, Australia. The authors reported that expert teachers had a number of routines which were similar to the core of structured activities and routines which other studies of expert teachers have shown to be effective in guiding practice (Leinhardt and Greeno, 1986).

Overall, Ayers et. al. (2004) described six categories which help define effective teaching. These are: relationships with students; personal qualities; resources and planning; professional development; school background and subject faculty. Many of these categories have close links with the central features selected for this research. For example, Ayers et. al. (2004) explain that teachers' beliefs and orientations were frequently noted as important (88%) in building 'relationships with students' and in defining the construct against which different teaching strategies would be enacted. Similarly, content knowledge expertise was perceived as a critical 'personal quality' (60%) in improving student confidence. Within the 'resources and planning' category, preparation was identified as a fundamental part of effective curriculum decision-making with a particular emphasis on delivery strategies (88%). A notable finding was the lack of dependency expert teachers had on text books and other curriculum materials available. Lastly, for most teachers it was their own teaching experiences and professional reflection which was considered the biggest influence on 'professional development' (66%). The group of expert teachers was divided on the role of conventional 'in-service' courses as a valuable form of professional development. Some teachers cited lack of availability and poor quality as a reason for non attendance, while others commented on the usefulness of the content knowledge and teaching strategies information provided. The importance of the general ethos within schools and the ability of faculties (departments) to share ideas and resources were also cited as positively enhancing curriculum delivery; findings which match Lingard's QSRLS analysis, where effective reform of pedagogies tended to be based 'more in departments than across the whole school' (Lingard, 2007, p. 258).

In attempting to learn more about effective teachers in a Scottish context, Brown and McIntyre (1993) used students' opinions about the effectiveness of teachers to construct a profile of excellence. Brown and McIntyre (1993, p. 28) noted (in ways which support the choice of the four central features identified in this research) that perceived teacher strengths were: the ability to create a controlled but enjoyable and relaxed atmosphere; to have content knowledge expertise; to present content in interesting and motivating ways and to set achievable but challenging expectations, which led to students responding to learning and assessment contexts with original rather than prescribed answers.

2.7.1 Pedagogical content knowledge and the avoidance of teaching to the test

One of the main professional issues associated with the development of teachers' pedagogical content knowledge is how teachers can develop rich rather than rote learning environments where students are schooled towards completing examination answers by using a restricted set of pre-planned answers. Tinning (2002, p. 225) comments that changes to the senior curriculum in schools in Victoria, Australia 'ended up corrupted by the politics of assessment' and Bryce (1999, p. 657) has noted that in Scotland in recent years discussions about assessment have become 'more conspicuous than curriculum' based discussions. Therefore, how can the adverse consequences of rote teaching, learning and assessment procedures be avoided?

Carr (2003, pp. 156-157) argues that the nature of the subject being studied might be an influential factor to consider when stating that:

.. it would seem that the formidable challenge of good teaching in arts subjects is to walk a fine line between equipping pupils with the knowledge, understanding and skills that are the technical prerequisites of successful artistic expression and production, and suppressing the

singularity of personal expressive vision which is also a *sine qua non* of authentic artistic engagement.

By inference, for similarly inclined awards (such as high-stakes examination awards in PE) an emphasis on personal performance and individually divergent answers is vital for authentic engagement and assessment. In trying to promote authentic student learning and assessment, Ayers et. al. (2004) found that expert teachers selected different and often demanding texts which they considered would motivate and interest students rather than other texts which would have presented easier assessment options. Clearly an over reliance on some texts and the reproduction of a set syllabus could, if adopted in an uncritical fashion, ‘where the end product is deemed to be more important than the learning process’ result in a reduction in the vibrancy of teaching, a lack of development in students’ literacy skills and the onset of teaching to the test (MacPhail, 2007, p. 56).

2.7.2 Pedagogical content knowledge and the development of curriculum literacy

In similar ways to Brown and McIntyre (1993) in Scotland, Wyatt-Smith and Cumming (2003) researched senior high school students’ perspectives about the literacy demands of curricula in New South Wales and Queensland, Australia. Their research programme examined the literacy challenges students encountered in managing their learning across different subjects. Wyatt-Smith and Cumming (2003) collected video evidence of classroom observation in over 100 subjects. Evidence was analysed to identify how students engaged with different areas of curriculum literacy (note-making, mix of spoken and written tasks, discursive writing, textual analysis and the like) and of how students completed assessment tasks in different subjects. Wyatt-Smith and Cumming (2003) found that students were expected to cue into both subject specific demands as well as the unique delivery approaches of individual teachers. Crucially, teachers tended to assume that students already possessed the required literacy competences. Consequently, rather than providing supporting explanations as part of teaching and assessment practice, traditional and transmissive

pedagogical practices were enacted with little recognition that subject-specific literacy demands are dynamic, contextualized and complex.

By contrast, Ayers et. al. (2004) found that for expert teachers developing student understandings was carefully built around questions which attempted to link existing and new areas of content knowledge. In whole class teaching convergent (single correct response) questions were mostly used to try to connect related concepts. When teaching was with individual students, however, more open divergent questions were used to develop student's interpretative abilities. In this way, expert teachers could combine whole class and individual student teaching when seeking the types of dynamic contextualized student engagement which are frequently advocated within most high-stakes examination awards. Additionally, note-making was characterized by students developing their own notes following whole class discussions or teacher presentations. This was instead of note-taking, which was based on exactly what the teacher had stated or asked to be copied. The key was student ownership, and of students accepting responsibility for the quality and relevance of what was written and subsequently accessed for formative and summative assessment purposes.

2.7.3 Pedagogical content knowledge and formative assessment

Wyatt-Smith and Cumming (2003) highlight how the development of student curriculum literacy abilities in comprehending and understanding learning tasks requires linking with the expectations set for students, and to the feedback about performance students receive as part of their formative assessment. This is because the meta-language of specific curriculum and assessment expectations needs to be evident to students. Wyatt-Smith and Cumming (2003) noted that the reductive use of formative assessment in teaching and learning is possible in environments where the teacher is the time keeper and record keeper, and where the students are the test takers. These types of arrangements reinforce the traditional teacher-student relationships, even though something else is usually intended in terms of curriculum aspirations

2.7.4 Pedagogical content knowledge within Physical Education

When studying the development of pedagogical content knowledge in student PE teachers, Graber (1995) noted that the biggest difficulty arose when student teachers only had a minimal knowledge of practical activities. In these situations, student teachers tended to focus on trying to understand activities to the detriment of considering effective teaching and learning strategies. For teaching in high-stakes examination awards the implications are clear; knowledge of practical activities as well as a clear content knowledge of the disciplinary concepts associated with activities is necessary, as well as teaching strategies which can motivate and secure the active engagement of students. If this combination occurs, then the greater the potential there is to develop students' critical thinking skills (Flavell, 1979). Lee and Solmon (1992) and Lee et. al. (1992) found that, in complex PE environments, many students have difficulty in developing critical thinking skills and in relating what they were doing to the teachers' expressed aims of developing both physical and mental abilities. Similarly, Luke (1998) found that students can often describe tasks rather than explain the purposes behind them. As a result, students' views are often superficial. This type of evidence indicates the challenges which are ahead if teachers are to embark upon a cycle of activities, of the type viewed by Shulman (1987) as essential for effective teaching (comprehension, transformation, instruction, evaluation, reflection and new comprehension) and which are designed to highlight to students the embedded curriculum literacy skills and criteria for formative assessment.

Thus, in summary, even though comparisons of expert and novice teachers are quite common, little research has been completed specifically on how teachers apply their knowledge in the selection of teaching strategies in PE. Accordingly, there is a need for field research which captures the complexities involved in an integrated curriculum, where learning is social as well as individual and where knowledge is often certain but also, at times, problematic (Berlak and Berlak, 1981).

2.8 Implications for research

Given the challenges teachers might face in deploying effectively an integrated curriculum model, this review has focused on many of the most apparent expertise and decision making issues associated with effective teaching and with securing a high level of active student engagement. Specifically, the review has discussed teachers' attempts to develop students' curriculum literacy skills as well as the influence of assessment procedures on pedagogical practices; a situation where a focus on addressing short-term assessment pressures could conceivably lessen longer-term learning benefits. It is thus important to analyse further how teachers reconcile these types of issues through their decision-making about the integration of practical activities with associated content knowledge and with the procedures for completing assessments.

2.8.1 Models of teaching, learning and assessment

In order to enable interpretation of the four central features of teaching and learning previously identified (teachers' orientations, knowledge expertise, curriculum decision-making and pedagogical content knowledge) a model which was capable of displaying the dynamic interconnections associated with teaching, learning and assessment was required. The eventual model devised sought to avoid the potential pitfalls of 'the grand theory/abstracted empiricism and politics/instruction binaries and instead ... seeks to integrate theory and data' (Lingard, 2007, p. 252). Accordingly, the model created was considered capable of translating the constructivist teaching and learning approaches described in the Higher Still Physical Education rationale into an analytical framework which would support in-depth enquiry. Consequently, the multi-dimensional model devised draws together the central features of teaching, learning and assessment as the organizing framework for completing a programme of research.

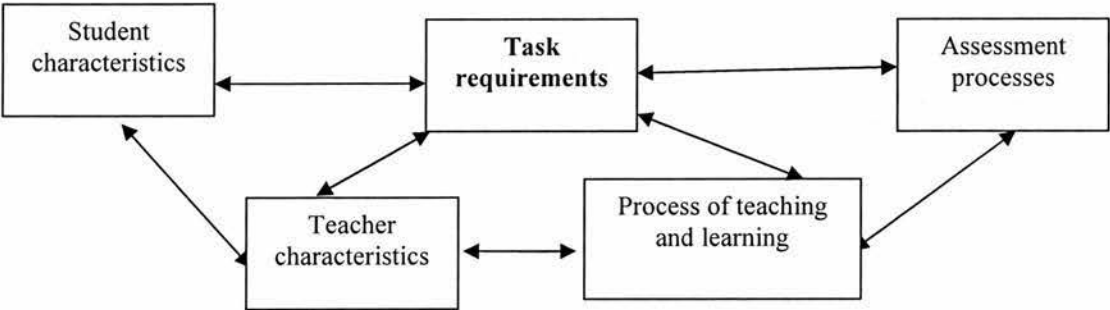
The main areas of data collection are outlined in linear form below. This is intended to illustrate how the initial teacher and student perceptions of teaching and learning were used as the basis for

later and more detailed analysis of how these characteristics impacted upon the processes of teaching and learning and the completion of assessment procedures.

Teacher characteristics	Students characteristics	Process of teaching and learning	Assessment processes
Beliefs, values Content knowledge / expertise Course planning Expectations self-efficacy	Prior knowledge Approaches to learning Metacognition Motivation, self-esteem	Implementation of teaching strategies Nature of student tasks	Unit / course assessment Quality of learning Affective outcomes Levels of attainment Comparison in and between schools

In the further construction of the model it was necessary to ensure that a focus was retained on teachers’ curriculum decision-making when trying to enact productive teaching and learning methodologies. Thus, the focus of the model recognizes that the task requirements in teaching and learning are likely to be influenced by each of the four sets of inter-connected characteristics and processes (Figure 1). Accordingly, it was vital that the model in embryonic form reflected these four characteristics and processes and their links to the task requirements as outlined below.

Figure 1: Factors influencing the main task requirements in teaching and learning



Following further reflection and experimentation the eventual model devised (Figure 2), in drawing upon and adapting the work of Hallam and Ireson (1999) after Biggs and Moore (1993), attempts to include the inter-connections and relationships that are most influential in teaching, learning and assessment while also recognizing the progression and directionality associated with school course awards. Thus, the model is informed by a constructivist view of teaching and learning, where learning is dependent upon the ways in which individual students engage with particular situations

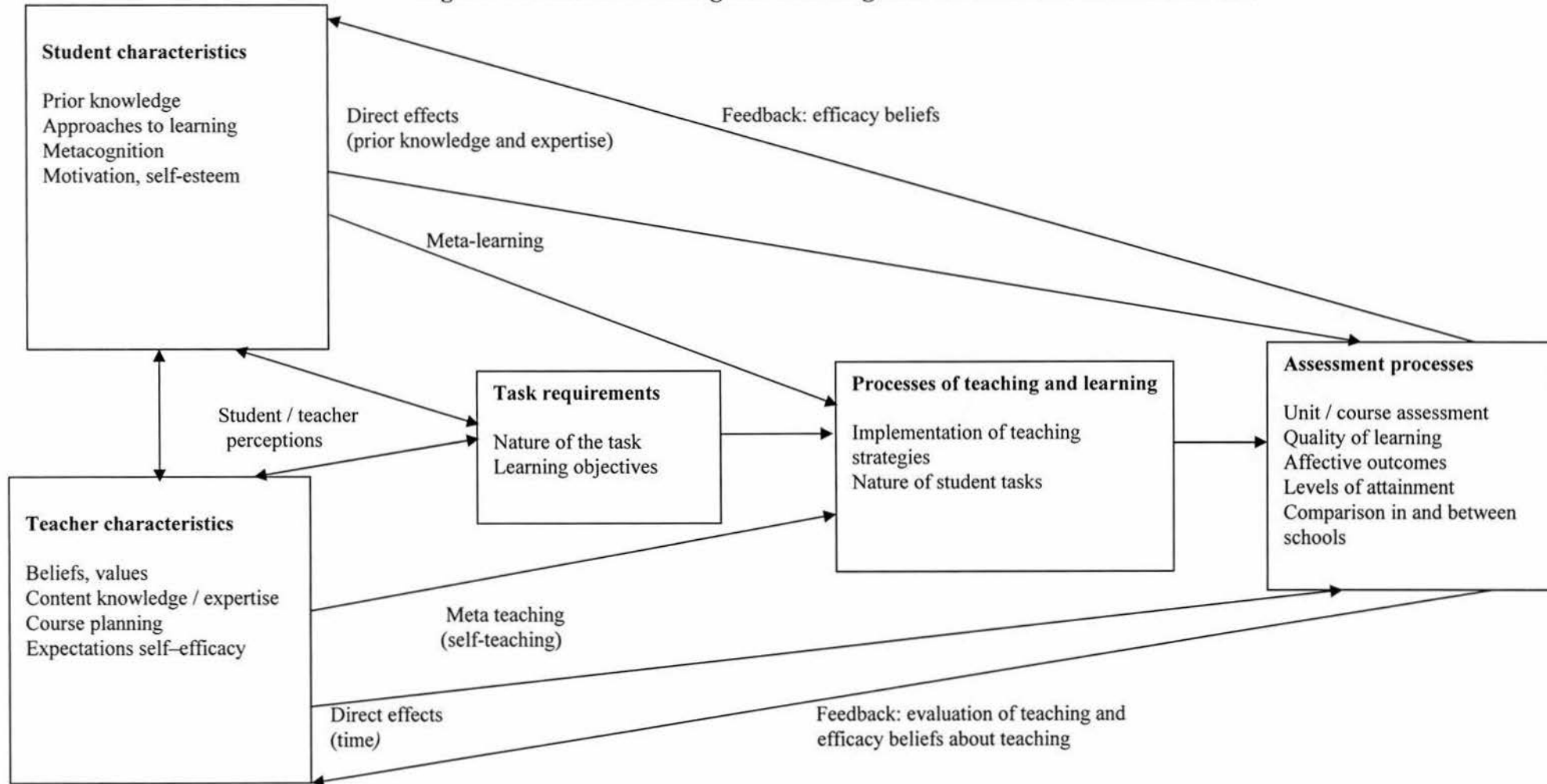
en-route to drawing their own associated plans of action and eventual conclusions. The concept of 'constructive alignment' (Biggs, 1996, p. 1) underpins the model through recognizing the ways in which teacher and student learning characteristics link to the specifics of teaching, learning and assessment processes. As such, the model is intended to be dynamic and responsive through recognizing that change in one area of teaching and learning affects other areas. Consequently, for example, the result of students' assessment is likely to have a 'backwash' effect (Biggs and Moore, 1993, p. 84) on the construction of future teaching and learning environments.

The model tries as well to recognize the inherent unpredictability of teaching where 'shared experiences over time shapes the collective life of the class, often in ways that have a dramatic impact on what gets accomplished' (Siedentop, 2002b, p. 429). Thus, through choosing a multi-dimensional model, there was an initial recognition of the wide range of factors which can affect learning outcomes, including students' characteristics of learning such as prior knowledge and levels of motivation (Kolb, 1984). Accordingly, the model attempted to move beyond the limitations of past process-product research studies where these types of influences have been inadequately considered (Rink, 1999).

However, while it builds on the initial model (Figure 1), it is recognized that the model (Figure 2) only highlights some of the complexities involved in practical experiential learning. Nevertheless, it is considered that the model contains the capacity to complete a focused investigation through emphasizing particularly, by way of directionality arrows, many of the more vital teacher and student influences on the process of teaching, learning and assessment. The model highlights the importance of student / teacher perceptions of a learning environment (Ennis, 1996), as well as acknowledging many of the critical influences that affect teachers' knowledge base and curriculum decision-making (Fernandez-Balboa, 1997). In summary, therefore, while the model of teaching and learning can appear complex to comprehend immediately, it does nevertheless with further scrutiny

contain the capacity to guide further research about the challenges of curriculum integration and knowledge representation within practical learning environments.

Figure 2: Model of Teaching and Learning used in Phase 1 research 2000-2001



However, before the links between these issues in teaching, learning and assessment can become the focus of field research, there was a need for greater awareness of the policy and practice context within secondary schooling in Scotland and the history of how examination awards in PE were introduced and developed. This, therefore, is the focus of Chapter 3. Accordingly, the chapter contains an analysis of the current strengths and weaknesses of different examination awards and draws upon the authors' own experience as a National Development Officer (NDO) for Higher Still Physical Education from 1998 to 1999, member of the policy forming Higher Still Physical Education reference group from 1995 to 2001, Principal Examiner for Higher Grade Physical Education from 1996 to 1999 and author and co-author of many student resources and policy documents which surrounded the development of examination awards (Higher Still Development Unit, 1998a; Higher Still Development Unit, 1998b; Higher Still Development Unit, 1998c; Thorburn, 1996; Thorburn 1999b; Thorburn, 1999c; Thorburn, 2001a; Thorburn, 2004a; Thorburn 2005; Thorburn, 2006a).

In summary, Chapter 3 is designed to provide clarity about what are considered to be the relative merits and limitations of the policy process adopted and to indicate how the author's own involvement in the policy process sensitized the author to the complexities of the situation. This ensured the author was aware of the fine detail of issues and was able to include such understanding in the collection of field research data, which was designed to analyse the main issues associated with the ongoing imbalance in levels of student attainment in HSPE. This is important for, as Dey (1993, p. 15) indicates, before data can be collected they have first of all to be 'noticed'.

Chapter Three: CURRICULUM INTEGRATION AND KNOWLEDGE REPRESENTATION WITHIN HIGH-STAKES PHYSICAL EDUCATION PROGRAMMES IN SCOTLAND

3.1 Introduction

This chapter describes the implementation and development of PE examination awards in Scotland. Following an explanation of the rationales for Standard Grade Physical Education (SGPE), Higher Grade Physical Education (HGPE) and Higher Still Physical Education (HSPE) the three major examination awards available to schools since 1988, there is an analysis of the general policy context against which awards in PE have been developed.

This review of policy implementation and development is necessary because, since examination awards in PE began, a number of pedagogical and assessment issues have emerged which might influence to varying degrees the ongoing imbalances in attainment achieved by students. There is a need therefore for a more rounded and detailed comprehension of the Scottish policy context in order to cast further light on the central research question. This will ensure that later research is alert to the range and complexity of issues which might influence the attainment profile of students.

By way of introducing some of the complexities which exist it is important to note at the outset that nearly 60% of PE teachers (N=1419) are over 40 years old, with many teachers having begun their careers before the introduction of examination awards. Thus, despite having, along with music and drama, one of the youngest age profiles for teachers of any subject within the curriculum (Scottish Executive, 2005), the majority of teachers are nevertheless likely to be involved in delivering awards which were not an explicit part of their initial teacher education experience; in fact, for the latest higher level award which was introduced in 1999, nearly three-quarters (74.6%) of teachers were in post

before the award began (Scottish Executive, 2005). These factors indicate that reviewing the overarching policy influences which shape the research framework is important for setting in context later field research findings about the effects the introduction of examination awards has had on teachers' orientations (beliefs / values), knowledge expertise, curriculum decision-making and pedagogical content knowledge.

3.2 The rationales for Standard Grade Physical Education (SGPE), Higher Grade Physical Education (HGPE), and Higher Still Physical Education (HSPE).

3.2.1 Introduction

The rationales for the above awards explain how practical 'Performance' should naturally and feasibly be integrated with associated areas of 'Knowledge and Understanding' (KU), Evaluation (EV) or 'Analysis of Performance' (AP) (SEB, 1987; SEB, 1993; SQA, 1999c). This form of integration is designed to lead to rich learning environments where students can improve standards of practical performance as well as understanding the processes involved in analysing performance and the content knowledge understanding which underpins performance improvement.

Integration of this form is evident in SGPE, a two-year course for students in S3/S4 (14-16 years old), HGPE a one-year course for students in S5/S6 (16-18 years old), which ran from 1994 to 1999, and in HSPE, a framework of awards predominantly aimed at the outset for the S5/S6 age group which replaced HGPE in 1999. The integrated approach to teaching and learning is to an extent reflected in the assessment arrangements, where in SGPE, the weighting for Performance is 50% and 50% for KU and EV (SEB, 1987). In HSPE at 'Higher' level the original weighting was 50% for Performance and 50% for AP and the Investigation of Performance (IP) (SQA, 1999c). In 2004, the revised arrangements for HSPE contained a 40% weighting for Performance and 60% for a new unit titled Analysis and Development of Performance (ADP) (SQA, 2004a), the same weightings between performance and

analytical areas which existed for the duration of HGPE (SEB, 1993). HSPE courses last for 160 hours, take place over one full academic session and are often used as part of students' entry requirements for tertiary education. In HSPE, selected practical activities link to concepts in four different areas of AP (Appendix 1). Practical performance abilities are measured by teacher judgement against criteria on the extent to which students 'demonstrate effective performance in challenging contexts' (SQA, 1999c). The assessment of AP involves three extended response answers in a two and a half hour written examination for students at Higher level (SQA, 1999c).

3.2.2 Standard Grade Physical Education

In SGPE each school creates their own award based on a mix of activities, learning experiences and attainment outcomes satisfying national arrangements (SEB, 1987). The guidance on 'Learning and Teaching' outlines seven main teaching approaches for consideration. These broadly reflect the 'Spectrum of teaching styles' devised by Mosston (1966). Beyond some straightforward elaboration of the essence of each style/approach little further advice is provided. By 2000, nearly 18,000 students were completing SGPE each year; approximately 27% of the school population for the S3/S4 age group (SQA, 2000a). The relative number of male and female students selecting SGPE has changed little since the award began with approximately 70% of those completing the award being male.

3.2.3 Higher Grade Physical Education

Following a successful degree of lobbying for its inclusion, based on the popularity of SGPE, HGPE was introduced in 1993 (Thomson, 1993). Achieving integrated aims through practical experiential learning was again the focus. The rationale (SEB, 1993, 1.3, p. 4) states that:

... the course will engage students in an increasingly sophisticated and rigorous study of the ways in which physical activities are performed. Performance will be the prime

focus, a practical experiential base upon which skills and techniques, knowledge and understanding, analysis and evaluation are developed in an integrated way.

Even less explanation on learning and teaching approaches was offered than for SGPE. Some limited information was provided on the role of the teacher (SEB, 1993, 4.3, p. 10), when it was stated that:

The nature of the work at Higher Grade clearly points to the need for students to develop independence in both thought and action. For the teacher this means a change in role from one of organiser and manager to that of co-ordinator, facilitator and consultant.

By 1999, nearly 4000 students were studying HGPE annually, over two-thirds of whom were male (SQA, 1999b).

3.2.4 Higher Still Physical Education

Achieving integrated aims through practical experiential learning was again reflected in the aims of HSPE. This framework of awards was designed to increase overall coherence and progression by offering students five different levels of award to pursue (Access-Advanced Higher), and credit for both unit (internal assessment) and course award (external assessment) success. The rationale for HSPE at Higher level (SQA, 1999c) mentions that:

Performance is the prime focus of the Higher course in Physical Education. Practical experiential learning provides the opportunity to develop the high standards of performance and the skills and technique, knowledge and understanding required to develop this. Students have the opportunity to study physical education at a challenging level and to develop critical and imaginative practice in order to achieve an understanding of performance and the ways in which it can be improved.

The general thrust of the teaching and learning advice is about the characteristics of an effective practical workshop. The 'Guidance on Learning and Teaching Approaches' (SQA, 1999c) for the AP Unit states that:

Practical workshops are suggested as the best means of reinforcing facts and principles which emerge from the performance. Practical workshops can support candidates in developing the skills of independent learning. Workshops should have a practical problem-solving orientation. ... Dialogue, co-operation and discovery are central features of a workshop environment.

By 2000, nearly 4000 students were studying at Higher level in HSPE with nearly 2000 students completing awards at Intermediate 2 level, the level immediately below Higher level. As with the other awards mentioned over two-thirds of participating students were male at both Intermediate 2 and Higher level (SQA, 2001b).

Beyond the specific wording of the rationales advanced for different examination awards in PE, some further reassurances are provided that integrated teaching and learning approaches are effective. The HMIE report 'Learning and Teaching in Scottish Secondary Schools Physical Education' (SOED/HMIE, 1995, 2.24, p.10) states that 'Students perform and understand best when their learning

tasks are developed in a practical setting with an immediate opportunity to apply knowledge or test ideas.'

3.3 Policy making in Scottish Education 1980 – 2005

Historically, 'the Scots are famously proud of their education system' (Gatherer, 2003, p. 1022) and currently new devolutionary powers are quickly being seized upon in order to ensure that a distinctly national character continues to define Scottish education. Yet even though many new policy interventions in teaching, learning and assessment are planned, no major structural changes are intended, with the overwhelming majority of secondary school age students (96%) continuing to be educated in local comprehensive schools (Hayward, 2007). Ozga (2005, p. 216) considers that these settled schooling arrangements, together with a 'heavily unionised workforce', have led to Scotland possessing a more autonomous teaching profession and a more consensual policy development style than is often the case in other countries.

However, despite the 'new found confidence of the Scottish nation combined with its longstanding enthusiasm for personal and social development through education' it is likely that 'growing anxieties about performance' will inevitably place a strain on attempts to achieve consensus between the policy community and the teaching profession in future years (Menter et al. 2004, p. 211). For example, Bryce and Humes (2003, p. 42) note the traditional dominance of the top down subject-centred curriculum and comment that 'practical abilities, investigative skills, problem-solving, oral abilities and so forth got into the secondary curriculum, within subjects, but the strain they create for assessment and certification means they remain somewhat curtailed, indeed are under pressure to be reduced.' Thus, overall, Humes and Bryce (1999, p. 104) note that even though Scotland '... exhibits anti-Conservative tendencies (in a party-political sense), the process of educational advancement nonetheless reflects a

determined conservatism. Scotland has never been extreme with its educational innovations; the Scottish approach has always been to integrate innovation firmly into traditional approaches.'

Nevertheless, the ongoing commitment to comprehensive schooling made it a 'demographic inevitability' (Paterson, 2000, p. 52) that major reforms were necessary, as by the early 1990's it was generally recognized that while the curriculum breadth available in higher grade examinations was a laudable achievement, the levels of attainment realized by students was poor, especially at a time when it was expected that increasing numbers of students would remain in schooling until the post compulsory senior school years. Thus, the typical 'policy community' (Humes, 1999, p. 75), consisting of representatives from HM Inspectorate of Education (HMIE), the Scottish Qualifications Authority (SQA), curriculum organizations such as Learning and Teaching in Scotland (LTS), combined with a few selected Head teachers and teachers, were asked to work in a familiar consensual way to produce a policy report on 'Upper Secondary Education in Scotland' (The Howie Report) (Scottish Office Education Department, 1992).

Humes and Bryce (1999) assert that the conditions which enable a consensus model of policy making to prevail are dependent upon recognizing, from the outset, that partners are not equal and of comprehending that policy has to be part of a managed process. McPherson and Raab (1988) suggest that to be part of the policy community requires more than expertise alone. A sense of deference, a respect for confidentiality and an ability to work through the proper channels are necessary. At certain times, McPherson and Raab (1988) indicate that variations between a pluralist and corporatist interpretation of a consensus model of policy making exist. Pluralist approaches occur when the expertise of professionals is particularly sought and is characterized by time spent negotiating and agreeing details with all concerned. Corporatist approaches are defined by more obvious centerist

control of policy through, for example, only inviting carefully selected professionals to be involved with policy initiatives. A pluralist approach to policy making was evident in the development of the Standard Grade programme where, as Humes (1999) notes, many teachers were aware of the limitations of previous 'O' grade courses and were convinced of the need for curriculum change. However, the process of implementation was time consuming. Standard Grade took eleven years to introduce.

By contrast, with the development of Standard Grade, the Howie report 'radicalized the debate' (Raffe et al., 2002, p. 171) about senior secondary schooling through, for example, its proposals for creating separate academic and vocational pathways which while being intended as equal in status, breached overarching comprehensive ideals. Therefore, in seeking to devise an acceptable compromise reform, which retained curriculum breadth but avoided creating separate academic and vocational pathways, HMIE adopted a much more pivotal (corporatist) role in the development of policy with the intention of delivering controlled and speedy implementation of policy (Paterson, 2000). Accountability and outcomes based procedures for the rigorous monitoring of awards became key features of the Higher Still programme through proposals which reasserted the role of subjects and largely ratified existing age level progressions (Fairley and Paterson, 1995).

Raffe et al.'s (2002, p. 178) analysis of the Higher Still policy process centred on three points, firstly that a unified, flexible system involved more conflict than other types of reform as provision was defined by a number of potential 'fault lines' involving different types of curriculum, levels of study, types of institutions (schools and Further Education post 16 colleges) and student age groups. Within such a framework vested interests, for example, between the different aspirations of schools and colleges will produce conflict which tends to fester as the common design rules within a unified framework do not permit exceptions or different policy interpretations. These problems were

exacerbated due to the flexible design of Higher Still units and courses as before students can progress between different levels in the framework, assessment is required and this tends to increase the bureaucratic demands made on teachers' time. Secondly, due to sensitivities about the scale of the reform, Higher Still was presented as a modest 'technical fix' (Raffe et al. 2002, p. 179) rather than a clear vision of how the policy principles of greater opportunity and progression could benefit students. Thirdly, unified flexible systems tend to be linear, centralized top down and disenfranchising for teachers; for while teachers will be involved in constructing curriculum at an individual school level, the overarching design principles had already been decided upon. Thus, the policy objective was that implementation was to be a tightly managed affair which could not become distracted or unduly delayed by teachers' professional concerns.

3.4 Policy making in Scottish Physical Education 1970 – 2005

During the early 1970s' PE existed in a 'world of its own' where up to 500 delegates would attend annual conferences of the Scottish Physical Education Association (SPEA) to discuss the relative merits of human movement studies, functional skill-based programmes and the like (Thomson, 1993, p. 6). However, by the mid 1970's PE, like other subjects, was required to review aims and intentions in light of changing political, social and economic circumstances which began to impact on education policy and schooling (Anderson, 1999). During this period, two influential committees 'The Structure of the Curriculum in the Third and Fourth Years of the Scottish Secondary School' (Munn Report) (SOEID/SCCC, 1977a) and 'Assessment for All' (Dunning Report) (SOEID/SCCC, 1977b) were appointed with a remit to address curriculum design and assessment issues in the middle years of secondary schooling. The implementation of the Munn Report through the 'Framework for Decision' (SOEID/SCCC, 1982) led to examinations awards in PE becoming available for the first time within an overall curriculum model where similarly subjects were clustered together.

The intentions of this model reflect the theoretical ideas of Peters (1966) and Hirst (1974) who considered that curriculum should be organized around different intellectual modes of enquiry (forms of knowledge). What policy makers in PE had in effect argued was that while the Peters-Hirst academic conception of education is essentially correct, with some careful adjustment and redefinition, PE could be accommodated within it; a position considered preferable to only offering core PE programmes for most students or of embarking upon a quest to argue for an alternate conception of education. Through the development of HGPE and HSPE during the 1990s this type of justification for examination awards in PE continued.

The Dunning Report attempted to balance traditional norm referenced assessment protocols with more inclusive criterion referenced statements about student performance (SOEID/SCCC, 1977b). Hence, at Standard Grade level attainment would be based on performance against criteria at school level, as well by normative comparisons of students when national award cut-off score decisions were made by the SEB/SQA. One important design consequence of adopting this approach is that in order to promote movement between levels, the knowledge base defined for Standard Grade subjects' needs to allow students access to the same width of knowledge. Students can only feasibly progress if the level of knowledge required will be deeper, but not different from areas of knowledge previously studied. The implications of adopting this approach would have similar implications for HSPE as well.

In further deploying the curriculum model, MacPhail (2007) acknowledges in a HGPE context that while teachers are unlikely to be directly involved in the production of discourse, at a local school level their influence will be pivotal in putting policy into practice. Accordingly, there is a need to review how teachers responded to the pedagogical and assessment challenges of introducing examination awards.

3.5 Pedagogical concerns about the nature and coherence of the rationales selected for examination awards in PE

In addition to the author's own professional experience in examinations awards (Chapter 2.8) many teachers, advisors and lecturers commented on the pedagogical and assessment demands of examination awards in PE in the non-refereed Scottish Journal of Physical Education (SJPE), which was frequently a forum for presenting opinion. And, while some of the SJPE articles can lapse towards the anecdotal, they are nevertheless, when scrutinized over the period, insightful in outlining many operational points of concern about putting into practice centrally prescribed examination awards based on achieving integrated learning aims through practical experiential learning. The last issue of the SJPE was in 1999 and since then there has been something of an absence of professional commentary on policy and practice (Brewer, 2003).

3.5.2 Standard Grade Physical Education

Thomson (1993, p. 6) noted during the development of SGPE that 'Gradually the colleges (teacher training institutions) were marginalized as the fulcrum of power and influence shifted to the SED and the Inspectorate'. As such SGPE was heavily reliant for professional development on what Humes (1999, p. 80) refers to as 'intermediate' staff (teachers, lecturers and advisors) who attempted to satisfy two divergent audiences – those of the policy community at national level, and, practising teachers at a local level at the same time. This model of development continued into HGPE and was particularly prominent during HSPE, even though, as Humes (1999) indicates, it can be an untidy and frustrating model for policy development. Intermediate staff, for example, were able to report back on issues encountered, but had limited power and opportunity to rectify any emerging problems.

Nevertheless, by the late 1980's, support materials were available for SGPE and these offered advice on course planning and assessment as well as activity-specific examples of how different learning outcomes could be achieved. In addition, many local authorities seconded teachers to design further support materials and provide on going advice and in-service training. As such, SGPE was relatively well supported (Cairns, 1997), especially given the long period for award implementation. Furthermore, performance-led activity based experiential teaching and learning approaches appealed to teachers' values. In the only detailed nationwide study of teacher values in recent times Sharp (1990) found that male and female teachers alike considered the development of motor skills to be the most important part of their remit. Likewise, Bilsborough and MacLeod (1998, p. 23) noted that:

Teachers took it for granted that physical activity would be the nucleus of any Standard Grade course. There was never any possibility that they would entertain a classroom based, academic study of physical education - a route which some colleagues in England had followed.

However, despite agreement over SGPE intentions, four factors are worth exploring further. These are:

- the development of content knowledge
- issues surrounding gender participation and attainment rates
- evaluation of the Scottish school curriculum in general and SGPE in particular
- disparate levels of attainment between Performance and KU and EV

SGPE and the development of content knowledge

Kirk (2002) cites the influence of the Scottish School of Physical Education (SSPE) where most male student teachers were educated and Dunfermline College of Physical Education (DCPE) where most female student teachers were educated (prior to their amalgamation in 1986) as significant in the development of SGPE content knowledge. Kirk (2002) notes that it was the masculine centered

references, embedded in perceptual-motor skills and games statements from the SSPE, which tended to inform the development of policy. This was in preference to the female centered aesthetic references which guided the submission from DCPE. Considering that many female PE teachers had indicated (Sharp, 1990) that motor skill development was their most important objective (if not female teacher educators at DCPE), it is evident that policy makers involved in developing SGPE recognized the importance of teachers' preferred beliefs.

Problems began to emerge, however, when it came to specifying the detail (breadth and depth) of content knowledge required. This was important as later curriculum programmes attempted to recognize as their starting point the content knowledge definition specified for SGPE. Overall, the Arrangements document (SEB, 1987) was light on detail in the different areas of KU, as well as on the breadth and depth of understanding required by students. Consequently, it was left mostly to individual teachers to make the planning and pedagogical connections required. Some teachers combined forces to publish text resources, for example, Physical Education Standard Grade Course Notes (Black et. al., 1995). Scrutiny of this text highlights just how different the performance-led Scottish curriculum was from other knowledge-led approaches adopted within examination awards, for example, GCSE Physical Education in England and Wales. One example should suffice in highlighting the disparity in levels of expectation. Within 'the body' in SGPE (Black et. al., p. 22), the authors' state when describing the oxygen transport system that:

1. **Why** is oxygen important?
Your body needs a regular supply of oxygen to stay alive
Working muscles need energy which is supplied by oxygen
There is an increase in the amount of oxygen needed as an activity becomes more demanding
2. **How** does oxygen reach the muscles?
The body's **respiratory** and **circulatory** systems work together to provide the muscles with oxygen. This is known as the oxygen transport system.

By comparison, ‘Revise GCSE Physical Education’ is far more elaborate and exemplifies in greater detail the knowledge expected to be understood by students about the oxygen transport system. Webster (2001, p.81) states that:

In order to work or run, our muscles must be able to contract. To do this they need energy. Muscles get most of their energy when **glucose** and **oxygen** react together. Oxygen is obtained through the air by normal breathing. Glucose, however, comes from the food we eat.

Food such as bread, potatoes and rice contain carbohydrate

↓
Carbohydrate is digested to form **glucose**

↓
Glucose passes through the wall of the stomach into the **blood**

The blood carries some glucose to the muscles

↓
The glucose is stored in the muscles as **glycogen**

↓
The glycogen breaks down to glucose when the muscles work to produce **energy**

The two respective books are also physically different in terms of size. Black et. al., (1995) is only 48 pages in total, while Webster (2001) consists of 160 pages. Accordingly, whether it is possible to develop at Higher level a more significant grasp of the oxygen transport system when students have such a limited underpinning content knowledge of this area is a concern. For example, if you believe that working muscles can receive adequate energy by breathing alone, will you be disadvantaged relative to students who understand how the consumption of food when combined with oxygen creates energy?

SGPE and issues surrounding gender participation and attainment rates

The number of girls choosing SGPE, the quality of their learning experiences and level of attainment realized has been the subject of much research (Cooper, 1985; Cooper 1986; Menzies, 1997; Menzies, 1998), comment by HMIE (SOED/HMIE, 1995, 5.69) and discussion with HMIE (Quinn, 1994).

Additionally, an Assessment Panel subcommittee for SGPE presented further guidance and advice about how the assessment arrangements for practical performance should be completed (SEB, 1997b). At this time, Performance in SGPE was the only element within any Standard Grade award where boys had higher levels of attainment than girls (SQA, 1998a). However, whether the precise research and policy attention on gender participation and attainment rates ignored the bigger picture of attainment for all students is a key point to consider. In short, there appears to be a danger of misunderstanding the true extent of the learning and attainment problems which exist through focusing attention on gender related aspects of SGPE rather than on a wider effectiveness and outcomes based review (Bruce, 1999; MacBeath, 1999). The delay in scrutinizing assessment results is evident when findings reveal that between 1993 and 2000 the greatest percentage difference between boys and girls achievement at any of the six award levels possible in SGPE was a modest 4%. Consequently, a brief examination follows of the most common evaluation approaches utilized in Scottish schools in an attempt to analyse how such a situation could have emerged.

Evaluation of the Scottish school curriculum in general and SGPE in particular

A mix of reflective evaluating approaches e.g. 'How Good Is Our School' (SOEID/HMIE, 1996) and effectiveness and attainment based approaches e.g. 'Setting Targets - Raising Standards in Schools' (SOEID/HMIE, 1998), where the extent to which quantifiable outcomes is achieved or not are present in Scotland (Bruce, 1999).

Within SGPE, research on practice shows a bias towards reflective research which, while useful as a starting point for analysis, runs the risk of inadequately considering many of the required effectiveness and attainment based issues. To date, how many schools have changed the types of activities offered as a consequence of reading gender-based studies by authors such as Cooper, (1995; 1996) and Menzies

(1997; 1998), and how many schools have changed their pedagogical approaches as a result of analysing SEB (1997b) and SOED/HMIE (1995) advice is unknown. However what is known is that reviewing SEB/SQA outcomes based statistical evidence highlights the sustained nature of the imbalance in levels of attainment between Performance and KU and EV; a particular subject-based problem within a system where overall the 'statistical data about achievement is deplorable' (Bruce, 1999, p. 403). Consequently, it is necessary that future field research includes student attainment outcomes as well as teachers' professional reflections about pedagogical matters, for without this combination of evidence it is possible that teachers might consider there are set solutions for rectifying learning problems (Eraut, 2000).

Disparate levels of attainment between Performance and KU and EV

In light of the ongoing attainment problems which have been highlighted, how have the PE profession commented about the factors which might influence the imbalance in levels of attainment between Performance and KU and EV? Most comments, to date, have centered on the influences of problematic content knowledge and the pedagogical complexities of teaching SGPE. MacGowan (1993), in a review of SGPE five years after implementation, argued that it was difficult to learn about certain facts and principles through practical experiential learning and Stirling and Scott (1989) noted the difficulties of achieving differentiation in KU to suit the needs of all students within the same class. Yet, even though evidence was beginning to emerge of a gap between policy expectations as monitored by the HMIE and the ability of teachers to deliver the standards of attainment expected through performance-led teaching and learning approaches, HMIE continued to assert the need for varied teaching approaches (HMIE, 1995). However, on the specifics of how the integrated teaching and assessment of performance and knowledge and understanding could be improved, little is forthcoming. For example SOED/HMIE (1995, 5.68) outlines that '*It is hoped* (emphasis added) that schools will be encouraged ... to use

teaching approaches aimed at developing in their students real understanding through practical tasks which challenge and excite them.’

As well as growing anxieties about the teaching of SGPE, there was also increasing concern about some aspects of the assessment process. From the inception of SGPE through to 1995, KU was assessed by an open-book assignment. However, the KU assignment was withdrawn and replaced by a end of award KU/EV examination. The reason for the change was that the SEB had detected an increasing amount of rote prepared answers by students. As each student’s answers had to be signed off by the class teacher, teachers were clearly implicated in such maladministration. However, perhaps as alarmingly, the reasons for the required change were not widely reported, and it was only through later personal involvement with the examining team for HGPE that these reasons were discussed as similar problems began to emerge with AP and IP.

3.5.3 Higher Grade Physical Education

Unlike SGPE, HGPE was developed on its own rather than as part of a wider curriculum review of other subjects. Furthermore, relative to the development of SGPE (1977-1987) the timescale for the development of HGPE (1991-1993) was modest, as was the degree of staff and resource support provided (Cairns, 1997). Again, there were problems in defining the width and depth of content expected for AP and in anticipating the pedagogical demands of teaching at this level.

Defining content knowledge

Cairns (1997, p. 21), when reflecting on HGPE three years after its inception, stated that ‘Our syllabus, as laid down in the Arrangements Document for Analysis of Performance, stretches to one and a half pages and this is hardly crammed with type. Little wonder we are experiencing difficulty’. In agreement

with this commentary, MacPhail (2007, p. 52), when summarizing teachers (n=151) views about whether to introduce HGPE or not, found that 'no teacher voiced support for the flexibility encouraged in the HGPE Arrangements document'. All teachers wanted greater prescription about what was specified as examination content knowledge rather than the task of making year-by-year integrated connections between performance experiences and broadly headed areas of AP. Furthermore, just less than half (46%) of teachers who were planning to introduce HGPE considered that sufficient teaching and learning resources were available.

Pedagogical demands

Lobban (1994, p. 18) was among the first teachers to probe the challenges of teaching a class with varied performance and AP abilities and stated that:

My challenge is to create powerful learning environments in which there is a good balance between planned teaching, supported self-study and personal exploration. This means that students must have flexible access to a wide range of Performance, Analysis of Performance and Investigation resources both in the class and in self-study time. The structuring of each section of the course in the form of an assignment which students have an extended period to complete seems to be an appropriate way to address the challenge.

However, by contrast, some teachers began to question the efficacy of the practice-led approach itself.

Douglas (1998, p. 49) stated that:

Two years ago, my colleagues and I ... decided on a more structured theoretical approach to Analysis of Performance and spent a lot of time in the classroom delivering this topic. Our results improved and we intend to maintain this approach... There has always been concern about the poor results nationally in the Analysis of Performance paper. I would like to suggest

that we tackle this by ensuring that relevant INSET (In-service training) on theoretical applications is undertaken, and to look also at our methodology in delivering this part of the course.... We need to ensure that the profession is up to date with aspects of theory and we need to ensure that we ourselves can answer the questions that are set!

Thus, just as McGowan (1993) had raised questions about the extent to which teachers and students could readily integrate Performance and KU in SGPE, similar challenges were now occurring within HGPE, and the evidence was that teachers were responding in different ways to the pedagogical and assessment challenges posed. The challenges and concerns described by Lobban (1994) and Douglas (1998) were also reflected in commentary from MacPhail (2007) who found that only a third of respondents (32%) considered that the pedagogical approaches recommended were realistic with nearly two-thirds (59%) of teachers who were not planning to introduce HGPE citing the lack of staff development as the most significant factor influencing their decision. These findings are perhaps unsurprising given that published reports which compared different subjects in the same school and the same subject across different schools were at the time a central part of the school review and forward planning procedures (Brewer, 2003).

Overall, MacPhail (2007) found that the organizing framework which defined the Arrangements document (SEB, 1993) was viewed as too loose e.g. teachers found it unrealistic to negotiate with students each year the practical activities which would feature in courses. Additionally, teachers were critical about the lack of feedback about students' performance in national examinations, as it indicated a lack of sympathy and understanding about how assessment feedback on each student could usefully be incorporated into attempts to improve teaching, learning and assessment in future years.

3.5.4 Higher Still Physical Education

Introduction

At the time HGPE was introduced, it was already apparent that a further cycle of whole school curriculum change was forthcoming due to the introduction of the Higher Still programme. The implications for PE (along with other subjects) was the establishment of a Reference Group whose remit was to examine how current arrangements at SGPE and HGPE levels could dovetail with the aims and requirements of the Higher Still framework. The Reference Group was larger than for the development of previous awards with a membership of twenty professionals. Among the group, only two representatives were from Higher Education. Supporting the developments of HSPE were a team of three National Development Officers (NDOs) who were seconded from teaching posts in schools for various periods of time. NDOs worked under HMIE guidance, and this model of curriculum planning prevailed from 1995 to 2000. At the outset the HSPE Reference Group had three major areas of responsibility to consider. These were:

- the transfer from HGPE to HSPE, and the production of award arrangement specifications
- content knowledge changes following scrutiny of HGPE
- coherence and progression within the Higher Still framework

The transfer from HGPE to HSPE, and the production of award arrangement specifications

Fitting HGPE into the basic architecture of Higher Still required that the components of HGPE (Performance, AP and IP) became units within HSPE. While these adjustments were duly made it was apparent that such redrafting would have further curriculum and assessment implications. For example, within HGPE, Performance, AP and IP were integrated and taught together but assessed separately with the overall award mark being based on a combined total for all three components. At the first consultation stage in 1996, the HSPE Reference Group suggested that outcomes in Performance should

be integrated with those in AP, so that the award would be taught together and assessed together. A more complete form of internal integration as per the HSPE rationale would therefore exist. However, the PE profession during a consultation review of Higher Still awards were opposed this idea and on this occasion the Reference Group changed the unit and award design rules accordingly.

A frequent comment from many teachers advocated separate Performance and AP outcomes arose from a desire to reward students whose strength was mostly in Performance. It was claimed that if outcomes were combined together then relatively high performing students with modest analytical abilities might fail the AP unit and therefore be unable to complete the overall HSPE award at Higher level. By contrast, if Performance and AP units were separate then at least high performing students would gain some unit credit for their performance abilities. Hence, it might be that an able performer could pass the Higher unit in Performance and the units in AP and IP at Intermediate 2 level, enabling such a student to complete an overall course award at Intermediate 2 level. However, as a consequence of this decision the integrated rationale no longer dovetailed clearly with integrated assessment arrangements. Thus, the potential existed for the content knowledge associated with performance to be taught separately in detached class settings (Brewer and Sharp, 1999; Brewer, 2003).

Content knowledge changes following scrutiny of HGPE

As noted earlier, HGPE was frequently criticized for the limited definition of the breadth and depth of content knowledge students were expected to understand in the different areas of AP (Cairns, 1997). HSPE had some opportunities to address such a shortfall, even though it would be desirable if further content knowledge definition could avoid creating teacher unease about additional workload. The HSPE Reference Group attempted through the development of the 'Advice on the Content' (HSDU, 1998a) to clarify what counted as examination content knowledge by defining key concepts and

selected key features in each area of AP (Appendix 1). Within each key concept, teachers would be expected to cover a sufficient range of key features. It was never expected that teachers would cover all of the key features within a key concept, only those which were particularly important for the activities pursued in their course. Typically, teachers were advised that studying around 3-5 key features within a key concept should provide the breadth and depth of coverage required (HSDU, 1998a).

The model of key concepts and key features was devised by a sub-group of the Reference Group teachers in 1997. In order to promote curriculum coherence the model replicated earlier SGPE developments where the depth of understanding expected at lower levels was less than that expected at higher levels. However, in HSPE, the gap between the levels is wider in some cases and thus there are instances where content knowledge (key features) is defined at one level but not at another level. This has the potential to be problematic, both for teachers in terms of their curriculum planning and for students in terms of progression between different award levels in the Higher Still framework. In general, the Reference Group was deliberately, yet carefully, trying to nudge forward developments in certain content knowledge areas deemed as worthwhile for genuine performance-led learning, while also attempting to recognize teachers' workload concerns. Hence, there was further subject-based evidence of pluralist management approaches being used in trying to balance policy aspirations with practical implementation concerns.

In attempting to seek agreement about the breath and depth of content knowledge (HSDU, 1998a) further comment was sought from four lecturers in Higher Education. Fairweather (1998) was asked to review the 'Skills and Technique' section and made some theoretical criticisms about the inadequacy of the research informing the draft version of the 'Advice on the Content'. The teachers who produced this advice had defined content knowledge largely after reviewing Advanced Level PE texts from England

and Wales rather than recent research findings of which they were largely ignorant. Fairweather (1998) commented that:

In brief, changes must occur as science and research become a greater part of the physical education curriculum....Perhaps it is worthy of mention that the present skill learning curriculum at Moray House came as a major shock to the majority of students because this curriculum questions the very basis of their previous pedagogical behaviour and knowledge structure. Scotland must address the content validity of the current examined Physical Education courses. I do not perceive that the answers to the content and assessment problems can come from within the profession.

These criticisms were, at best, only partially addressed through successive re-drafting of the 'Advice on the Content' (HSPE, 1998a). During this period the views of an invited critical outsider from Higher Education were less important than meeting deadlines for the production of national support materials. This example highlights how challenging it can be for new examination awards in PE to define content knowledge which can be readily understood by teachers as well as being capable of standing up to rigorous academic critique.

One further consequence of revising content knowledge was that calls for the production of a set 'official' textbook increased (Cairns, 1997; Douglas, 1998; Kidd, 1999), as teachers often asked why they were supposed to 'reinvent the wheel' (Freel, 1999, p. 21). However, the realization of integrated learning aims through practical experiential learning does not sit easily with the production of a set textbook. Consequently, the course notes produced for HGPE (Thorburn, 1996) and for Higher level (Thorburn, 1999a; Thorburn, 2004a) are inevitably general in nature and use examples from many

different practical activities as the prompt for explanations of content knowledge which is associated with the key concepts.

Coherence and progression within the Higher Still framework

Raffe et. al. (2002) considered that Higher Still could become swamped by coherence, progression and assessment concerns to the extent that wider discussions on values and purposes were less evident. This appears the case with HSPE where the short-term implementation of awards fully occupied the attentions of the Reference Group and teachers alike. Consequently, while there was a proliferation of support materials produced to help teachers (HSDU, 1998a; HSDU, 1998b; HSDU, 1998c) there is the risk nevertheless that teachers become rather dependent upon the production of support materials to guide their teaching. The low levels of uptake at Intermediate 1 and Advanced Higher level (Table 2) highlight some of the short-term problems of focusing on the production of support materials at Intermediate 2 and Higher level.

Table 2: The participation figures for Higher Still Physical Education at Intermediate 1, Intermediate 2, Higher and Advanced Higher level from 2000-2001 to 2002-2003.

Year	Intermediate 1	Intermediate 2	Higher	Advanced Higher
2000-2001	337	1782	3699	36
2001-2002	400	1711	3696	60
2002-2003	369	1690	3970	75

One of the few areas of critique about the Higher Still framework came from Further Education (FE) lecturers who at various in-service training days complained about the narrow definition of the HSPE rationale. Concerns were based on attempting to satisfy an academic conception of PE, to the detriment of adequately considering and devising awards which were more vocationally inclined. Accordingly, it was argued that in attempting to satisfy the school audience at Higher level, an opportunity to develop a broader range of PE awards had been missed as what was offered instead was rather one dimensional.

In summary, it appears that implementing policy proved extremely demanding for the professionals and NDOs actively involved on the HSPE Reference Group. The focus on providing content knowledge definition and adequate support materials was perhaps inevitable given the relatively recent and problematic introduction of HGPE, and the challenging Higher Still strategy of most subjects introducing Intermediate 2 and Higher level awards ahead of awards at other levels (Raffe, et. al., 2002). Consequently, it is worth analysing results at higher level (HGPE between 1994 and 1999 and HSPE between 1999 and 2003) to understand more about the curricular, pedagogical and assessment challenges facing teachers and students.

3.6 Evidence from results in Higher Grade Physical Education (1994-1999) and Higher Still Physical Education (1999-2003)

3.6.1 Higher Grade (1994-1999)

Analysis of results at Higher level indicates a similar imbalance in results between performance and analytical areas as those which exist between Performance and KU for SGPE. Thus, in 1999, for example, students on average achieved 86.5% of the marks available for Performance with the average achieved for AP being only 36.0% of the marks available and 44.3% of the marks available for the IP. Taken together (AP and IP) there is a marked difference between students' level of competence in performance and analytical areas (86.5% versus 38.7%). These attainment problems were exacerbated by the modest feedback available to teachers as the information received from the SEB/SQA contained only a final grade for each student. Furthermore, there was no mention of how the final mark awarded was composed from the three course components (Performance, AP and IP). In addition, teachers were not aware of the cut off scores used to determine the percentage of students achieving a pass grade at 'A', 'B' or 'C' pass level.

Due to this lack of information teachers might reasonably assume that achieving half of the available marks (75 out of 150 marks) was necessary for a 'C' pass. In fact, it was always higher due to SEB/SQA senior examination officials trying to ensure that students achieving an HGPE award had a balance of competences in the different award components (Performance, AP and IP) and not just predominantly in performance alone. This situation contributed to differences existing between the results students achieved compared to those anticipated by their teachers. For example, based on the variety of statistical data available to the Principal Examiner for HGPE at cut-off scores time, it was apparent that teachers estimated that between 72% and 77% of students would pass at either 'A', 'B' or 'C' level each year. However, the actual pass rate each year from 1995 to 1999 varied between 45% and 58%. The constant over-estimation of student performance has been a common problem across many similar awards in the United Kingdom (Murphy, 1979; Murphy, 1981; Delap, 1994; Dhillon, 2005).

One consequence of teachers' misunderstanding of pass rate standards and lack of awareness of how they were composed was evident through the narrowing of the learning and assessment environments experienced by some students (SEB, 1996; SEB, 1997a). The Annual Statistical Report (1998a, p. 22) noted that 'The examining team found increased evidence of rote learning' and again in 1999 (SQA, 1999a, p. 20) that:

As in the Investigation, the written paper (AP) highlighted weaknesses in the ability of candidates to demonstrate critical thinking and apply related concepts and relevant knowledge, and to make detailed suggestions leading to improvement. Some markers reported evidence of candidates preparing for the examination through rote learning of answers.

In summary, MacPhail (2007, p. 44) considers that there was a 'lack of understanding as to the expected roles between the re-contextualizing agents (policy makers) and those operating in the

secondary field (schools and teachers)’ and this created tensions regarding levels of support and assistance as implementation continued. Consequently, when HSPE began in 1999, many of the potential traps and compromises of delivering authentic high-stakes examination awards were already apparent in embryonic terms.

3.6.2 Higher Still Physical Education (2000-2003)

Despite the imbalance in results between Performance and AP, the Reference Group sanctioned an assessment weighting change so that HSPE would be weighted equally between Performance and a combination of AP and IP, as opposed to the 40/60 weighting which was in place for HGPE. This had a dramatic effect on the overall higher level pass rate, as from 2000 onwards the pass rate at awards levels ‘A’, ‘B’ and ‘C’ has been above 80%, despite the modest mean scores achieved in analytical units of study (SQA, 2000b; SQA, 2001b; SQA, 2002b; SQA, 2003b).

The Reference Group also took the opportunity to redefine the areas of AP from those which existed for HGPE by repositioning and reasserting the importance of appreciating quality performance through an overarching area of AP titled ‘Performance Appreciation’ (Appendix 1). This area of AP was designed to ‘adopt a broad perspective’ (SQA, 1999c) that linked to the other three more specific areas of AP: ‘Preparation of the Body’, ‘Skills and Technique’ and ‘Structures, Strategies and Composition’. This repositioning aimed to rectify the imbalance which occurred in HGPE, where on average only 2% of students studied Appreciation of Action (SEB, 1996; SEB, 1997a; SQA, 1998b; SQA, 1999b). Thus, not only did Performance Appreciation assume a wider, more overarching role but the nature of content knowledge in this area of AP changed as well. Appreciation of Action in HGPE was defined largely through aesthetic references to the movement analysis work of Rudolf Laban and as noted earlier these references were not chosen in the development of content knowledge at SGPE (Kirk, 2002). Aware of

this situation, the sub-group of the Reference Group developing the 'Advice on the Content' (HSDU, 1998a) attempted to replace the more overtly aesthetic references with a more personalized account of how quality performance could develop. However, subsequent Principal Assessors' Report's (SQA, 2000b; SQA, 2001b; SQA, 2002b; SQA, 2003b) indicate that Performance Appreciation answers remain very low in number and poor in quality and as a result the repositioning exercise has not had the intended benefits on learning and attainment which was intended.

Again (and as with HGPE), Principal Assessors' Reports highlight the debilitating influence of rote learning and assessment procedures raising questions about why teachers use these approaches and indeed of how prevalent they might be in other higher level examinations. For example, in the Principal Assessors Reports for 2000 and 2001 it is noted that:

In the AP exam, markers reported evidence of candidates being over prepared through rote learning for the answering of questions. The examining team found the incidence of this to be on the increase. Again this year there were examples of packs of ten candidates' work where they had answered the same three questions all using identical contexts and memorized detail.

(SQA, 2000b, p. 8)

There were some instances where all the students from a centre were attempting to apply a pre planned set response to an area of AP. This strategy was met with mixed levels of success with the more able students managing to achieve a fair but rarely high score while the less able frequently failed to fully answer the question.

(SQA, 2001b, p. 6)

Overall, this short review has highlighted some of the main factors which might explain the continuing imbalance in the profile of students' attainment prior to analysing in greater detail some of the precise assessment problems which might account for these circumstances occurring with such regularity.

3.7 An initial analysis of the assessment problems in Higher Grade (1994-1999) and Higher Still Physical Education (1999-2003).

3.7.1 Higher Grade Physical Education

To improve understanding of the assessment problems initial analysis will focus on students typical answers to specific questions used in national examinations. This should provide information about why certain questions were popular and which parts of specific questions were best answered relative to others.

In HGPE (and later in HSPE), there are generally two types of examination question. There are process-led questions which are characterized by students being asked to provide an initial description and explanation, followed by reference to their own performance strengths and weaknesses. Details are then required about a suitable course of action for improvement and ongoing evaluation. These questions follow a recognizable 'cycle of analysis', and reflect the advice offered on teaching and learning (HSDU, 1998b) with questions usually coming in three or four parts with each part worth 4 to 6 marks. Question 1 in Table 3 is an example of this type of question. However, for the quality of answers to rise above the descriptive, students need to connect their description to relevant content knowledge, in order to meet the critical thinking requirements of the question. If successful, students are able to demonstrate understanding of relevant content knowledge and its effective application in the context of personal performance improvement.

The other type of examination question is usually in fewer sections, with each part of the question worth a larger number of marks. In these questions, students are asked to provide detail on some key areas of content knowledge at the outset. Students must then explain and discuss why this content knowledge is important for their performance development. In these questions students are expected to connect their answer to relevant analytical processes as the answer develops. To choose this type of question students need to be secure that they have a depth of relevant content knowledge. Question 2 in Table 3 is an example of this type of question.

Table 3: The two Analysis of Performance questions used in the 1998 national examination for Higher Grade Physical Education in Structures and Strategies.

Marks

1. When deciding upon a structure, strategy or movement composition you must consider the potential strengths and possible weaknesses of each of the options available to you.

(a)	Describe a structure, strategy or movement composition you have used in an activity of your choice.	4
(b)	Discuss the potential strengths of the structure, strategy or movement composition you have chosen in relation to a team, a group or your individual performance.	5
(c)	Discuss possible weaknesses you considered when adopting this structure, strategy or movement composition.	5
(d)	In applying the chosen structure, strategy or movement composition used in parts (a), (b) and (c) you will have reviewed and evaluated your performance. Discuss how you did this and why this process of review and evaluation was important.	6
		(20)

2. Choose three of the factors listed below. Explain, in detail, the importance of each when applied within the same structure, strategy or movement composition.

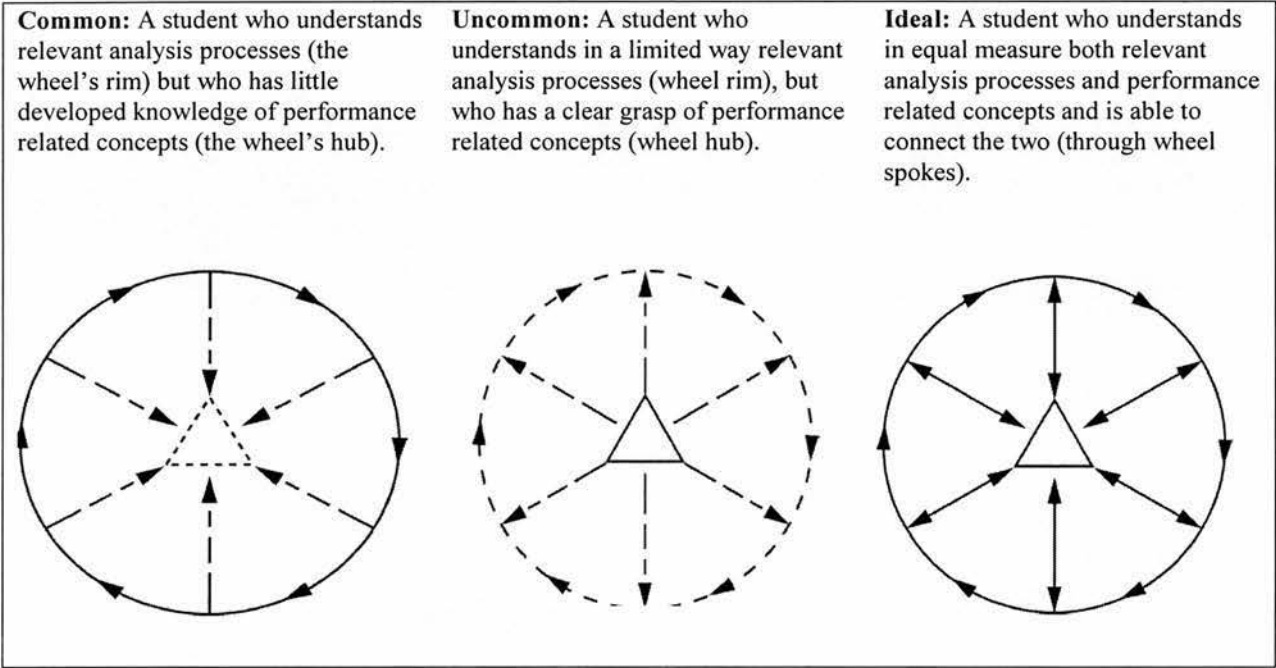
personal role role and responsibilities of others individual characteristics group characteristics strengths and weaknesses	width and depth previous performances effective cooperation and communication deception	motif development repetition and contrast creativity timing or change of pace
12		

(b)	To improve the performance you have described in parts (a) you will have had to adapt, on occasion, some of the factors you have chosen. Explain how you did this for two of the factors chosen, and the effect it had on your performance.	8
		(20)

Part of my remit as Principal Assessor for HGPE involved annually analysing how a sample of 500 students responded to different questions, in order to establish any apparent trends in student answers, and provide, where possible, any relevant insights for the examination authority. It was evident from analysis of the two questions (Table 3) that question 1 was by far the most popular with up to 99% of students choosing this type of question. This answering profile was also reported in the other areas of AP (SEB, 1996; SEB, 1997a; SQA, 1998b; SQA, 1999b).

Thus, evidence suggests that students typically prefer to write about the processes involved in analysing performance but have less confidence in writing about underpinning content knowledge. Figure 3 illustrates the typical ‘common’ case scenario by indicating how many students have an apparently strong grasp of analysis process but a weaker limited grasp of content knowledge. The complete lines are designed to indicate where students are competent and the broken lines are designed to indicate those areas where students are less competent. Figure 3 also illustrates the ‘uncommon’ case scenario, where students understand a great deal about areas of content knowledge, but have difficulty in describing how they analysed performance. There are very few such students. Figure 3 also indicates the ideal and outlines what HGPE (and later HSPE) students are intended to achieve; an equally strong grasp of analysis processes and underpinning content knowledge.

Figure 3: The Cycle of Analysis of Performance



The marking criteria involved in assessing Questions 1 and 2 in Table 3 relate to the three different competencies students are expected to develop in their analytical work. These are, firstly, to describe and explain performance, secondly to show evidence of critical thinking about relevant concepts and thirdly to show evidence of decision making and suggest improvements. Table 4 explains the relationship between the marking criteria and grade related criteria devised for the assessment of HGPE, and which were later adopted for HSPE.

Table 4: The relationship between the marking criteria and grade related criteria devised for the assessment of HGPE.

HGPE - AP Marking Criteria	HGPE - Grade Related Criteria
Describe and explain performance	Candidates should be awarded high marks if they give a clear, full and detailed description or explanation of a performance. Candidates should be awarded half of the marks available if they give a clear and satisfactory description or explanation of a performance. Candidates should be awarded low marks if their descriptions or explanations are limited in scope and/or unsatisfactory in detail.
Demonstrate critical thinking and apply related concepts and relevant knowledge	Candidates should be awarded high marks if they use a full range of relevant concepts and detailed knowledge to make judgements which are sound. Candidates should be awarded half of the marks available if they use relevant concepts and knowledge to make judgements which are sound. Candidates should be awarded low marks if they use a limited range of concepts and/or knowledge to make judgements which are shallow.
Demonstrate decision making skills and suggest improvements to performance	Candidates should be awarded high marks if they make clear, full and detailed suggestions for a course of action which is most likely to lead to improvements. Candidates should be awarded half of the marks available if they make clear and satisfactory suggestions for a course of action which is most likely to lead to improvements. Candidates should be awarded low marks if their suggestions for a course of action are limited and/or lacking in detail and are unlikely to lead to improvements.

Questions asking students to explain why specific areas of content knowledge were useful, for example, question 2(a) in Table 3 require critical thinking as the main competence of achievement. In contrast, questions such as 1(a) require students to show description and explanation of the analysis process as the main competence. However, the difficulty is that for the quality of such answers to rise above being simply descriptive students need to draw upon relevant content knowledge at later points in the answer, for example in question 1(d) (Table 3). At these points a different competence (critical thinking) is necessary and therefore students need to be certain that they possess the content knowledge necessary to gain marks at this stage in the question as well. Question 2 (Table 3) highlights that provided students have a reasonable degree of content knowledge understanding then a high number of marks could be available.

3.7.2 Higher Still Physical Education

Despite the difficulty of the cycle of analysis in producing the profile of assessment results expected, further pedagogical advice for teachers in the form of 'A Guide to Analysis of Performance' (HSDU, 1998b) indicated how the cycle of analysis (Figure 3) was an effective approach for developing students' problem solving approaches to learning. Based around the cycle of analysis, a number of Unit Plans (HSDU, 1998c) were developed by teachers. These resource packs were designed to highlight how initial course construction ideas could connect eventually to the assessment of student outcomes. Each of the twelve unit plans explained through a series of 'Information sheets', 'Task sheets' and 'Homework sheets' the integrated links between Performance (in one activity) and area(s) of AP (e.g. Basketball with Structures, Strategies and Composition).

However, despite the upbeat advice contained within the 'Guide to Analysis of Performance' (HSDU, 1998b) concerns persisted partly because in Higher Still awards students needed to pass all the units as well as the final course award. During the first operational year of HSPE in 1999-2000 the Reference Group responded to frequent teacher requests at national in-service days and other local authority meetings to reduce the range of the unit assessment demands in AP. In the AP course examination students are required to write about three areas of AP. The original drafting of the unit specification for AP at Higher level required students to complete answers in three areas of AP. However, this was interpreted by many teachers as excessive for unit assessment purposes. Subsequently, the Reference Group relented on this matter and to allay teachers' concerns the unit standard was reduced to writing about one area of AP only as the minimum requirement for passing the unit. However, whether such a popular maneuver was helpful to teachers and students alike is open to conjecture, for as noted earlier many students at higher level lacked the necessary competence in AP national examinations with the

pass rate expected by teachers not being matched by the pass rate figures which were subsequently announced.

With HGPE, there was the possibility of rectifying imbalances in students' attainment profile at a national level through the setting of the annual cut-off scores. This was a difficult policy to put into practice, but was a solution of sorts. A fundamental design rule within HSPE, however, is that there should be clear coherence between the criteria used for defining unit and course standards. Students who achieve all the units in an award should pass the final course assessment, as the unit pass standard is equivalent to working at a 'C' pass course award standard. If there is conflict between unit and course standards the greater the difficulty there is for teachers' to develop the required concordance skills necessary for accurately estimating the eventual awards students will obtain. Thus, ensuring that awards contain effective unit moderation arrangements becomes important for ensuring that teachers are alerted as necessary to what the national examination standards are and that students do not have the dispiriting experience of being presented for course awards at where they lack the required overall competence to succeed.

3.8 Summary

The opening part of this chapter described the aims and implementation process involved in introducing different examination awards and subsequent analysis outlined some of the many complex challenges associated with achieving the effective implementation of awards. To some extent, it appears that the curriculum integration and knowledge representation difficulties examined in this chapter indicate a growing divide between the aspirations of centrally defined policy and the operational problems experienced by teachers in trying to meet these aspirations. As such, longer-term concerns remain about the quality of teaching, learning and assessment in examination awards (Green, 2001; Green, 2005).

Nevertheless, when Ben Fryer (HM Inspector of Education with particular responsibilities for PE from 1972 to 1994) was interviewed by Quinn (1994, p. 24) about the major achievements of his period in office he stated that:

I have the highest regard for the developments made by the physical education profession over the last 10-15 years. The subject has moved forward tremendously in its broad concept of education, in the improvement to learning and teaching, in the provision of a whole range of courses, in taking on all the infrastructure of certification. ... I think that above all we have maintained the practical experiential nature of physical education at a time when it would have been easy to have adopted a more academic pose.

While Fryer is correct to identify certain achievements, as well as pointing to the political and policy ramifications for PE if examination (certificate) awards had not been embraced (Quinn, 1994), many of the problems of curriculum implementation are still evident some years later and have yet to be adequately researched. For example, one practising Principal Teacher of Physical Education (Freel, 1999, pp.19-20) candidly states that:

So how prepared am I for the advent of Higher Still? Up until this session we simply concentrated on the activities with the theory being 'tagged on' as almost as an afterthought at the end of each session. However, another look at the national statistics makes it abundantly clear that the theory side of the course is the part which is radically in need of overhaul in terms of material, presentation and integration.

Furthermore, Freel (1999, p.19) states that 'I must confess that I shudder when I see words like 'periodisation' appearing as one of the key features in one of the key concepts for Preparation of the

Body.’ To what extent, therefore, has the situation changed in recent years? Should we feel as proud as Fryer indicates at the introduction and development of examination awards (Quinn, 1994), or is it time for a robust appraisal of the teaching, learning and assessment challenges which exist and the progress which has occurred to date?

The intention of Chapter 4 is to set out the methodological basis for completing a programme of research with a progressive focus on addressing the various critical questions which have been highlighted to date in association with explaining the imbalance in the attainment of students completing examination awards in PE.

Chapter Four: Methodology

4.1 Introduction

This study has set out to follow the broad principles guiding quality research: namely that research should be characterised by developing an important question which can be investigated empirically; linking research to relevant educational theory (and curriculum arrangement statements); selecting appropriate research methods which enable the investigation question to be researched; coherently supporting interpretative claims made and finally communicating results to a range of professional audiences (O'Sullivan, 2007).

Accordingly, following the earlier introduction of the central research question, namely analysis of the teaching, learning and assessment issues associated with the uneven attainment profile of students in examinations awards in physical education in Scotland, and analysis of relevant educational theory and explanation of the policy construction process, this chapter begins by outlining the general approach to research (4.2). Thereafter, the design of the three research phases and the associated methodological procedures which were deployed for analysing the imbalance in the level of attainment achieved by students in HSPE are described in detail (4.3). Finally, in 4.4 issues surrounding the validity of the research approaches adopted are considered, as are the approaches which were used for analysing data.

4.2 General approach to research

The explanation of the historical and political situation against which policy was developed in Chapter 3 was designed to prepare the way for the adoption of a research focus which was progressive, selective and responsive to the key findings which emerged from the different phases of research. Accordingly, what characterises the research approach adopted is a combination of methodologies, which enables certain lines of research to be pursued at the same time as being alert to emerging key findings, in order that a more complete analysis of the central research question

can occur. Thus, guided and informed by the pre-research phase, the interpretive procedures followed attempted, through the collection of interview data, to analyse the effectiveness of existing teaching, learning and assessment methodologies. This approach is based on examining in detail the complexities associated with trying to deploy the rationale for HSPE awards, which asserts what are effective strategies for teaching and learning. However, these ambitions have not as yet been tested to any great extent. In addition, the research approach chosen also involves taking into account students' experiences of learning and their learning intentions.

Bain (1995) commented that while qualitative methods are frequently used in PE research it is objective methods which are mostly used for later interpretation. This can serve to lessen the significance of findings and may not genuinely represent the meanings associated with the researched area. As a result, Bain (1995, p. 244) has noted that 'Despite the promise of phenomenology for understanding our field, little of qualitative research in kinesiology and physical education is grounded in this theoretical perspective.' However, this thesis attempts to implement phenomenologically informed research approaches by interpreting students' analysis of their learning and assessment experiences alongside evidence drawn from teacher interviews about beliefs, knowledge expertise, curriculum decision-making and pedagogical content knowledge. Consequently, while earlier chapters have described what was supposed to be happening, this research intends to focus on what was perceived to be happening from both teachers' and students' perspectives, so that a meaningful interpretive account of findings could occur.

Taking the phases of the research in order, the first phase of research in 2000-2001, collected data from four sequenced teacher and student interviews within each of a varied sample of ten Scottish secondary schools. The intention was to understand more about how different aspects of teachers' and students' opinions of HSPE impacted upon the process of teaching and learning and subsequent assessment procedures. Analysis of data from the first phase of research revealed contrasting

patterns of teachers' curriculum decision-making. This led to a categorisation of different 'types' of schools; a categorisation which is much more fully explained in 5.3.

The second phase of the research addressed some of the limitations of the first phase of research, where the focus had been predominantly on teachers' curriculum decision-making with limited monitoring and evaluation of students' ongoing learning experiences and analysis of assessment procedures throughout an entire HSPE award. As Siedentop (2002b) notes if you want to analyse effectiveness you need to understand students' as well as teachers' experiences. Accordingly, in order to analyse in greater detail the major influences on teaching, learning and assessment, a further year long examination of exemplar schools, which had been identified by the first research phase as typifying set solutions to curriculum decision-making challenges, was undertaken. Data were collected from participating schools during one academic year (2002-2003) in three ways; firstly, through student interview findings, secondly, through student responses to specially set AP questions, and lastly, by comparison of course assessment results with the national assessment results for HSPE. Data were collected on four occasions during the year. In this way, student data were used as an accompaniment to teacher interview data and in a manner consistent with the intertwining of teaching, learning and assessment being pursued in the research.

While the first two phases of research set out to complete a focussed programme of research into teaching, learning and assessment in HSPE, it was also necessary that other emerging factors which could explain the comparatively poor examination achievements of students were researched. The dominant issue which emerged from interviews was that many teachers considered that it was the bluntness of the written assessment instrument for AP which was placing students at a disadvantage. Therefore, in a third phase of research during 2002-2003, a comparison of oral and written assessment was completed in order to provide findings on their accuracy and authenticity in HSPE. Six schools from the initial research phase were selected and in each of the schools two

students completed comparable oral and written assessments in order to enable a comparison of assessment instruments.

Overall, the three phases of data collection were expected to contain the capacity to yield informative and robust findings which illuminate the complexities of curriculum integration and knowledge representation within practical learning environments. However, a fuller understanding of the complexities involved required as well a wider conceptual review drawing upon philosophical literature. With these ambitions in mind, Chapter 8 presents a theoretical overview of some of the major conceptual challenges involved in trying to justify high-stakes examination awards in PE in more coherent terms.

4.3 Overall design of the three phases of research

4.3.1 Procedural and design issues influencing data collection for the first phase of research (2000-2001)

Prompted by the model of teaching and learning (Figure 2), the first interview asked ten teachers questions about the characteristics which shaped their learning environment and how these subsequently impacted on various course planning decisions. These one-to-one teacher interviews took place during the early part of the school year (October / November, 2000). Data were collected on a number of factors including teachers' initial teacher education programmes, teaching mentors, teaching career to date, perceptions of the status and specific aims of high-stakes examination awards and level of confidence for meeting the challenges involved in planning to deliver HSPE, including reference as appropriate to the effectiveness or otherwise of staff development programmes at national and local authority level.

Implementing the intention to gain students' perceptions of what was occurring in practice, the next interview round (November 2000) comprised ten group interviews with students who had completed HSPE at Higher level during the previous academic session. Typically, interviews

involved a random sample of six to eight students and in total sixty-eight students were interviewed. Questions focussed on the factors that influenced their own learning (motivation, self esteem), as well as their opinions about the teaching, learning and assessment environments they encountered, including reference to the pace and direction of learning and their interest in and active engagement with the learning and assessment process.

The second teacher interview (March / April, 2001) focussed on the fine detail of the teaching and learning process. It included considerations about the balance of teaching time, the types of teaching and learning tasks which were adopted, uses made of central support materials, any areas of problematic content knowledge and how teachers monitored levels of students' learning and set individual and group learning targets.

The final teacher interview (May / June, 2001) centred on how the assessment process affected ongoing course decisions during session 2000-2001. Data were collected on how teachers attempted to achieve a positive transfer between learning in practical settings and completing written assessment answers, and on how learning tasks were varied in order to extend students' understandings, plus the perceived merits (if any) of using class-based learning and assessment practice. The question specification for the four central features which forms the basis of the first phase of data collection is highlighted below (Table 5).

Table 5: The links between the four central features and the lead questions used during Phase 1 data collection.

Central features	Lead questions used during Phase 1 data collection (2000-2001)
Teachers Orientations	<p>Has teaching HSPE provided you with new challenges that have made your job more varied and interesting?</p> <p>To what extent do you consider that examination Physical Education should pursue varied objectives?</p> <p>Do you feel that recently PE teachers have spent too much time on examination PE matters and have ignored the needs of other pupils whose main interest is core PE?</p> <p>Do you think HSPE will have genuine status or do you think it will be the poor relation of other higher status subjects?</p> <p>Do you consider that student’s performance experience assists the development of meaningful and detailed analysis of performance answers?</p> <p>What information do you collect on students at the beginning of the course?</p> <p>Do you collect any feedback from the students at the end of the course? What have been the major findings over the years?</p>
<p>Knowledge expertise</p> <p>Content knowledge expertise</p> <p>Declarative and procedural forms of knowledge</p>	<p>Have the support materials and in-service you have received, combined with your own professional development, been sufficient to teach content knowledge as well as the process knowledge required at Higher level?</p> <p>Are the activities involved at Higher level ones in which you have personal experience and interest?</p> <p>How are you finding teaching content within the key concepts in the different areas of AP?</p> <p>How are you finding it to teach the processes involved in collecting data?</p> <p>How have you extended some tasks to make them suitably demanding for more able students?</p>
Curriculum decision-making	
Teaching and tasks	<p>What strategies for negotiation does the department apply when selecting students for Higher level?</p> <p>Which teaching styles have you found to be most effective for teaching Performance and AP together in an integrated way?</p>
Structural learning considerations	<p>To what extent do you consider that the right balance has been achieved in HSPE between policy directives and professional flexibility in designing courses?</p> <p>How well have the students responded to your teaching in terms of their motivation, ability to take responsibility for their learning and in sharing their intentions in learning with you?</p>
Setting individual and group targets	<p>How do you set personal targets for each student and explain to them what your own targets and expectations are for each of them?</p> <p>How do you monitor students’ learning and provide them with diagnostic feedback throughout the session?</p> <p>Can you explain the month by month teaching and assessment programme for the Higher level course for all three units?</p> <p>What is your opinion about the overall volume and demand of the Unit and Course Award assessment required at Higher level?</p> <p>What remediation is available to you in your assessment plan at Higher level and how are estimates of students’ performance calculated?</p>

Pedagogical content knowledge	
Curriculum literacy	<p>How do you attempt to ensure that the students understand the overall structure and design of the Course Award?</p> <p>To what extent do you consider that successful students are the ones who can relate well to you personally, and can understand and express the key points you have made?</p> <p>What type of students' tasks have you found to work particularly well for 'performance led' learning?</p> <p>Would you say that it is your students' level of motivation or comprehension that is most likely to affect their eventual success at Higher level PE?</p>
Rote teaching and assessment	<p>What benefits do you find, if any, in using classroom learning?</p> <p>To what extent do you find that the students all tend to write the same thing and that rote learning is a problem that affects students' level of interest?</p>
Content knowledge and formative assessment	<p>How successful do you feel your Higher level courses have been over recent years?</p> <p>What particular approaches / strategies have you adopted to try to ensure that there is a positive transfer between performance-led learning and high levels of attainment?</p>

All the teachers and students interviewed were Caucasian. The lead teacher in each school was, typically, a male teacher with 20 plus years teaching experience, although one school had an experienced female teacher in charge of HSPE. All lead teachers began teaching before the introduction of examination awards in PE and were Heads of Department (Principal Teachers). In considering the gender balance within the sample, it is worth emphasising that the purposeful sampling approach employed was based on school examination performance. In Scotland ‘there remains a preponderance of male Principal Teachers’ (SOED/HMIE, 1995, 4.4). As such, the sample selected, was for the most part, reflective of the national picture.

The interviews were designed to last for approximately one hour and were built around a structure of key questions with relevant follow up prompts. All interviews were taped and transcribed in full. During interviews, it was necessary to monitor the power relations through considering a range of linguistic and paralinguistic issues (Scott and Usher, 1999). A strong attempt was made to ensure that questions were neutral in tone. The author’s own professional experience and familiarity with the fine detail of issues associated with HSPE was helpful in this respect, as it was again in sustaining discussion and carefully probing further when seeking to generate additional teacher

elaborations on issues (Wellington, 2000). Careful consideration to the interview setting ensured that interviewees were as relaxed as possible, at times, and tightly structured and focussed on other occasions. Typically at schools with poor examination performance there was, at times, a slightly guarded concern about being interviewed.

This concern might have arisen due to interviewees recognising the interviewer's own professional association with the policy implementation process and of teaching and assessing HSPE. As such, it was necessary to recognise that while there were certain advantages of being involved in the development of HSPE, it was crucial that in interviews certain matters were not taken as unproblematic or taken for granted. Thus, it was important that interviews were conducted in a way which enabled what teachers were actually thinking and doing to be revealed instead of making any unnecessary presumptions. The interviewer role therefore was different from that involved when delivering staff development programmes, where certain pedagogical and assessment approaches, for example, might be viewed as desirable and other as less so.

During the interviews a lead question was followed up by a number of possible follow up, subsidiary questions. The interview approach chosen was deliberately responsive in allowing teachers to move away from the exactness of the questions asked as they recalled their experiences of teaching HSPE. Accordingly, a number of subsidiary questions were often asked during interviews. This approach was selected so that potential themes or discussion areas which could inform later analysis were included rather than excluded. Adopting this procedure is consistent with the interview advice offered by Scott and Usher (1999, p.113) who indicate that if the aim is to understand contexts better then 'the focus and frame are likely to be weaker'. Thus, when mapped onto the themes emerging from teacher and student interviews and outcome data, analysis enabled points of comparison and cross-school contrast to emerge. The profile of these commonalities and differences led in turn to the categorisation of different 'types' of schools.

When interpreting interviews, a consistent but flexible approach was adopted where it was accepted that meaning was primarily ‘conveyed by content rather than form’ (Dey, 1993, p. 115). Thus, whether a point was communicated in short expansive statements or in longer more expansive declarations, was not as important as evaluating whether statements communicated some form of particularly insightful and illuminating point of relevance, which required further critique and wider referencing against findings from other interviews.

Despite the planned advantages of the procedures adopted for the first phase of research it was recognized in advance that a potential weakness of the methodologies adopted is that it is only discussions of teachers’ practices which were being sought rather than observations of teaching combined with discussions of practice. Therefore, it is possible that there could be a lack of fit between teachers’ discussions of practice and teaching practices which actually existed.

Selecting schools

To obtain a representative selection of schools, the national examination results for session 1999 – 2000 were obtained on a confidential basis from the SQA. These results specified the number of students completing Higher level within HSPE, and the mean marks students achieved for each of the three units, as well as the final course award result for each student. This information assisted in purposeful sampling as scrutiny of results indicated that in session 1999-2000, 121 secondary schools had 10 or more students completing HSPE at Higher level. Accordingly, a sample of 10 schools was considered appropriate for ‘typical case sampling’ purposes (Wellington, 2000, p. 61). The schools invited to participate reflected the national profile, where there was evidence of three contrasting clusters of achievement (SQA, 1999b). Firstly, schools which had high levels of attainment relative to the national mean figures in all units; secondly, schools which had more modest levels of attainment, with some units being above the national mean figures for attainment

and some units below the national mean figures for attainment, and, lastly schools where there was a poor level of attainment in some or all units. Despite such categorization (high, modest, poor) it is important to recognise that in order to reflect the position nationally the sample schools selected were still typically characterized by a wide imbalance between the high standards of performance and the low standards of analytical enquiry (Table 6).

Requiring sampled schools to have a minimum of 10 students completing the Higher level award in 1999-2000 ensured that a bias in results created through a low number of presentations was reduced, and that evaluations of teachers' curriculum decision-making reflected more typical class sizes. Table 6 notes the attainment profile of each sampled school, the student numbers participating in the award and the levels of attainment achieved relative to the national mean in all areas of HSPE. Informed consent was obtained from all participating head teachers, teachers and students for access to school attainment results. Confidentiality was assured so that no school, teacher or student would ever be named in later report findings. The school number referred to in the far left hand column (Table 6) is a classifying number for each table which is referred to in subsequent classifications of schools' performance.

All sampled schools were mixed ability, non-selective, co-educational, non-denominational and from a variety of geographical areas and socio-economic circumstances. All schools were comprehensive state secondary schools, primarily serving students who resided in the immediate school catchment area. Each school selected was from a different one of Scotland's thirty-two unitary authorities. At the outset, it was intended to include an independent (private) school within the research sample. Very few schools however met the required criteria in terms of student sample size. Two private schools were approached, but both declined to participate. Only two state schools declined to participate, both of which were characterized by modest levels of attainment (high

performance and low AP attainment). Hence, in arriving at a sample of ten schools, fourteen schools were invited in total.

A brief description of each school and of the background and influences which shaped the lead teacher's professional beliefs was collected during a preliminary visit to each school. Further information from standard indicators for describing secondary schools, such as the percentage of the school roll receiving free school meals have also been added, as has supporting information on the general characteristics of each school (home influence, teachers' perceptions of school ethos), the particularities of each department profile (size, resources, staffing, timetable), and any distinguishing features of note for the student group being interviewed (e.g. gender ratio, group dynamics, similarities with other year groups).

To provide further background information about each school's examination performance in HSPE a SQA report was completed by the Principal Assessor for HSPE. These reports analysed results from the student cohort who completed HSPE during academic session 1999-2000. They were completed in order to provide information about the types of questions previous students in the sampled schools selected and the relative strengths and weaknesses of the answers. Permission was sought to obtain this information in the letter of invitation to schools.

Table 6: The levels of attainment achieved by each of the ten schools interviewed, relative to the national means for session 1999-2000, plus a record of each school's pass rate at Higher level relative to the national average (1999-2001).

School Number	Schools	Area	No. of pupils	Performance (90) Mark 1	School diff from Nat mean Mark 1	Analysis of Performance (60) Mark 2	School diff from Nat mean Mark 2	Investigation of Performance (30) Mark 3	School diff from Nat mean Mark 3	National % pass rate for students achieving 3 Higher awards at A-C level	
										1999 School % pass rate	2001 % pass rate
1	Poor attainment	Middle Class Town	17	73.0	-2%	17.9	-10%	7.6	-16%	47%	38%
2	Modest attainment	Lower (working) Class - Urban	10	76.8	2%	24.9	1%	11.4	-3%	28%	18%
3	Poor attainment	Semi deprived Urban	10	68.6	-7%	14.5	-16%	8.2	-14%	11%	14%
4	Poor attainment	Middle class Town	19	73.2	-2%	18.0	-10%	11.5	-3%	41%	46%
5	Modest attainment	Middle Class City	15	76.6	2%	21.4	-5%	12.7	1%	31%	35%
6	Modest attainment	Rural - mixed	12	64.3	-12%	29.6	9%	16.9	15%	19%	20%
7	High attainment	Lower-Middle Class - City	11	77.4	3%	30.8	11%	19.7	24%	17%	12%
8	High attainment	Middle Class – Large Town	16	84.4	10%	32.6	14%	14.5	7%	33%	41%
9	High attainment	Semi deprived Town	11	76.8	2%	35.9	20%	15.1	9%	13%	9%
10	High attainment	Semi deprived Town	17	79.8	5%	31.5	12%	14.0	5%	13%	12%
National figures			2671	75.0		24.1		12.3			

A summary of the data collection methods completed during the first phase of research is provided below.

Table 7: A summary of the data collection methods completed during the first phase of research

Data Collection	Number	Length of Interview	Format	Date
First round of teacher interviews	10 (1 x 10 schools)	One hour (approx)	Individual teacher interview	October / November, 2000
Student interviews	10 (1 x 10 schools, student n= 10-17)	One hour (approx)	Group interview	November 2000
Second round of teacher interviews	10 (1 x 10 schools)	One hour (approx)	Individual teacher interview	March / April, 2001
Third round of teacher interviews	10 (1 x 10 schools)	One hour (approx)	Individual teacher interview	May / June, 2001

4.3.3 Procedural and design issues associated with data collection for the second phase of research (2002-2003).

Selecting Schools

Based on the extended descriptions from the first phase of research concerning contrasting approaches to teaching, learning and assessment six of the initial ten schools were selected for the second research phase. Informed consent was obtained for access to student attainment data from all participating head teachers, teachers (n=6) and students (n=97). Confidentiality was assured so that no school, teacher or student would ever be named in any report findings.

Procedures

Interviews were used to solicit students’ perceptions of their learning experiences. Reflecting the progression used in the first phase of research, the first group interview in each of the six schools examined initial student expectations, prior knowledge, self esteem and levels of motivation for HSPE. The second and third interviews explored the challenges posed by developing process skills and underpinning content knowledge in selected areas of AP as well as students’ continuing level of motivation for the course. The fourth interview reviewed students’ learning and assessment experiences throughout HSPE.

The first interviews and student AP tests occurred at the beginning of the HSPE course in August / September 2002. The second and third data gathering visits took place in December 2002 and March 2003 to coincide with schools' schedules for completing unit AP assessments. The final data gathering visit occurred in May 2003, at the end of the HSPE course. All interviews were designed to last for approximately one hour and were built around a framework of lead questions. The author's understanding of HSPE was useful in sustaining discussion and in ensuring that questions related to the activities being pursued in the different schools.

Data collection on the development of students' AP understanding involved a series of written responses, which were completed in an examination setting. Reflecting the usual pattern in the award, AP questions were designed to indicate process skills and content knowledge competence. This enabled analysis of question responses to examine whether the imbalance highlighted by examination results where students typically were much more able to demonstrate process skills rather than content knowledge understanding was still prevalent. Each of the four student AP assessments were out of 30 marks and reflected the typical marks distribution within the two competences in the unit and external course assessment at Higher level (SQA, 1999c) i.e. process skills - one third and content knowledge - two thirds (Appendix 2).

The author's previous experience in writing unit guidelines and in setting course examination questions at national level for the SQA assisted in framing questions. To exemplify the type of questions asked and to highlight the different competences required by students the questions used in one area of AP (Preparation of the Body) are shown in Table 8. Questions 1-3 assess students' process skills while questions 4-8 are designed to assess underpinning content knowledge.

Table 8: The Analysis of Performance questions used in Preparation of the Body.

1.	Explain the methods you used for collecting information and why these methods were appropriate.	4 marks
2.	What information about your performance did you obtain from the data you had collected and why was it relevant to your performance.	3 marks
3.	Explain the course of action you designed to improve your performance and how you evaluated whether your course of action was effective.	3 marks
4.	Choose one specific aspect of physical, skill-related and mental fitness. Explain how, when combined together, they are important in your performance in an activity.	6 marks
5.	State two specific objectives for performance-related fitness in an activity.	2 marks
6.	Describe two advantages of a conditioning approach to training.	2 marks
7.	Describe the test procedures you have followed in a fitness test. Explain why following the test procedures in an accurate way helped ensure the test results were accurate and meaningful.	5 marks
8.	Within a training cycle based on preparation, competition and transition periods, what forms of training would be included during the preparation period?	5 marks
		30 marks

It was also important that the tracking methodologies planned were acceptable to teachers and that teachers understood that my primary role was to complete interviews and school based AP questions with students, rather than act as an adviser to the school on how to improve teaching, learning and assessment. This important point of clarification was made in the letter of introduction about the aims of the second phase of the research.

For the last area of data collection (comparisons between sampled schools’ results and national assessment results) students’ final assessment marks and grades were accessed from national examination results for each school during session 2002 – 2003. This information was obtained on a confidential basis from the SQA. Additionally, teachers were asked during the first visit (August / September, 2002) for their estimates of how well students were expected to progress on the course, thus enabling the second research phase to measure the accuracy of teachers’ estimates.

All test responses were marked by the Principal Assessor for HSPE. Diagnostic feedback about student performance was provided to lead teachers in the form of the marks each student achieved on an anonymous basis plus a short comment (30-50 words) about the progress of each student. In

addition, an overall appraisal comment (150-200 words) was provided on the performance of the whole cohort of students. This form of feedback supported the intermediary position intended between tracking schools' performance while also offering a degree of diagnostic feedback about student performance. Providing feedback also acted as a device for retaining the interest of teachers in participating in the research, as up until now such feedback was not readily available from the SQA.

Piloting of Analysis of Performance questions

In order to test the reliability and suitability of the AP questions, they were piloted in a school which was not involved in the research. The school was selected as a typical Scottish comprehensive school after factors such as number of students completing higher level awards, school size, school socio-economic catchment area and percentage of students staying at school beyond the minimum leaving age were taken into account. Students who were at the mid-point of completing the higher level award in HSPE in January 2002 answered the draft questions in each area of AP. Feedback was recorded from students about the wording of questions and answers were checked to ascertain whether any misinterpretation was evident or not. Some minor editing changes occurred following the piloting programme.

A summary of the data collection methods completed during the second phase of research is provided below.

Table 9: A summary of the data collection methods completed during the second phase of research

Data Collection	Number	Length of Interview / Test	Format	Date
First round of student interviews	6 (1 x 6 schools, n=14-18)	One hour (approx)	Group interview	August / September, 2002
First Analysis of Performance test	6 (1 x 6 schools, n=14-18)	One hour (approx)	Whole class test	August / September, 2002
Second round of student interviews	6 (1 x 6 schools, n=14-18)	One hour (approx)	Group interview	December, 2002
Second Analysis of Performance test	6 (1 x 6 schools, n=14-18)	One hour (approx)	Whole class test	December, 2002
Third round of student interviews	6 (1 x 6 schools, n=14-18)	One hour (approx)	Group interview	March, 2003
Third Analysis of Performance test	6 (1 x 6 schools, n=14-18)	One hour (approx)	Whole class test	March, 2003
Fourth round of student interviews	6 (1 x 6 schools, n=14-18)	One hour (approx)	Group interview	May, 2003
Fourth Analysis of Performance test	6 (1 x 6 schools, n=14-18)	One hour (approx)	Whole class test	May, 2003

4.3.4 Procedural and design issues influencing data collection for the third phase of research (2002-2003)

Participants

In the third research phase, the same six schools which were part of the second research phase were again used. In each of these six schools, two students completed both oral and written assessments, twelve students in total. The oral assessments covered all three areas of each student’s AP course experience and were conducted by a lecturer of PE in higher education who was familiar with the detail of content knowledge in the different areas of AP. Each interview lasted approximately 45 minutes. The interview process was initially piloted with first year undergraduate PE students who had successfully completed HSPE during the previous academic session. This enabled their feedback regarding question clarity to be included in the refinement of the questions asked during interviews.

Instrumentation

The AP questions put to students were similar to those asked in national examinations and thus some questions focused on process skills and others on content knowledge. Oral questions asked within one area of AP (Skills and Technique) are shown to indicate the similarity with one Skills and Technique question used in the 2001 SQA Higher level paper (Appendix 2). One challenge in HSPE is to construct questions which can be answered from a number of different activity experiences so students' answers are not unnecessarily constrained. To counter the effects of counter-irrelevance variance (Messick, 1989) it was imperative that interviewers understood that each student's performance-led learning experiences were the initial basis for asking questions. Thus, they listened and in part framed and initiated questions around student interview responses. However, even though both assessments were intended to take place as close as possible to each other and measure similar ability levels, it is necessary that subsequent analysis of results acknowledges that students' written examinations were completed as a high-stakes national examination and that by comparison the oral interview was a low-stakes assessment. Additional consideration of the differences between oral and written assessment and on students' motivation and engagement with either form of assessment are more fully described and discussed in the extended background introduction provided in Chapter 7.

Procedures

Interview transcripts were sent to the Principal Assessor for HSPE for marking. Detailed written feedback was provided about the strengths and weaknesses of each student's transcribed responses, as well as the mark that responses would have achieved if they had been submitted for final AP course examination purposes. The oral assessments took place during student study preparation time in May 2003, prior to the students' national AP examination in June 2003.

A summary of the data collection methods completed during the first phase of research is provided below.

Table 10: A summary of the data collection methods completed during the first phase of research

Data collection	Number	Length of interview	Format	Date
Student oral assessment	6 schools, two students per school	45 minutes (approx)	Oral interview	May, 2003
Student written assessment	6 schools, two students per school	45 minutes (approx)	Written test	May, 2003

4.4 Analysis and validity within the research programme

This section begins by describing the general research approaches which were adopted across the thesis and is followed by a more specific review of the procedures which were completed to try to ensure that the analysis approaches adopted were valid. The research programme also benefited from a number of planned procedures that were adopted to ensure that findings contained the capacity for wider inferences to be drawn. For example, at the beginning of the research a representative sample of schools were chosen which reflected a range of geographical and social circumstances. Thereafter, only schools were chosen which had realistic class sizes so that problems associated with unrealistic sample sizes could be avoided.

- **General research approach**

One of the major challenges in completing the research was becoming thoroughly familiar with the data and thereafter of suspending one’s own views and ensuring that interview evidence was examined in new, open and critical ways. For example, while the author’s own professional involvement with HSPE (as detailed in Chapter 3) could be considered helpful in terms of understanding the range of issues which might impact on teaching, learning and assessment it could also be a hindrance if this professional involvement interfered with the author’s research role, where a degree of distance and the avoidance of pre-conceived views was required.

This process was made achievable through adopting a recursive approach where data collection and analysis occurred simultaneously with each informing the other (Blaikie, 2000; Bryman, 2001) and thereafter by considering the collected data in relation to the principles of the chosen model of teaching, learning and assessment. Adopting this approach ensured that the analytical focus which emerged was 'in tune with the data' (Dey, 1993, p. 64) as recursive analysis ensured that interview explanations were interrogated for emerging categories of meaning (Green, 2000) with occasions where particular points were repeated being duly noted.

Through identifying the distribution and frequency of emerging categories of meaning and points of contrast across interviews the research was able to move beyond the weaknesses identified with action research, where the situational specificity of evidence often makes wider inferences from findings difficult to relay (Cohen et. al., 2000). The following illustration is designed to explain how this process influenced the conduct of interviews. At the first teacher interview, pre defined questions focussed on: the influences affecting teachers' beliefs and values; content knowledge / expertise; course planning and expectations and feelings of self-efficacy when teaching HSPE. During the interview lead questions addressed the above areas of focus with ongoing interview analysis generating follow up support questions on issues which required clarification and where further amplification might be insightful. Adopting this process ensured that data collection and analysis occurred concurrently during the interview phases.

As well as being alert to coming up with categories of meaning from the data, the research approach blended bottom-up and top-down models of research through analysing the data collected at the same time as researching revised conceptualizations of physical education. As such, there was a constant flip-flopping between the two when attempting to generate a greater understanding of the central research question (Pidgeon, 1996). Additionally, this recursive process continued on an ongoing basis between interviews as well in order that appropriate connections between the

collected data and the model of teaching, learning and assessment could progressively develop as the series of interviews progressed. Accordingly, prior to the second group interview with students, where the focus was on: students' prior knowledge; approaches to learning; metacognition and motivation, self-esteem, scrutiny of the first interview transcript proved helpful in identifying instances where follow up questions might be helpful. This approach was used, for example, in identifying whether there were any reported links between teachers' course planning intentions and students' reflection on the approaches to learning which were deployed.

The process of ongoing interview analysis to gain clarification and amplification as required continued in the third and fourth teacher interviews and between these interviews as well. In addition, the first two interview transcripts were reviewed in order that progressive connections and points which were repeatedly reported could be recorded and included in the analysis of data. Thus, continuing with the previous example, connections between teachers' course planning intentions and students' reflection on the approaches to learning could progress to include teachers' implementation of teaching strategies and findings on how assessment procedures were completed. Adopting this approach was informative in building a picture of the emerging contrasts and commonalities between schools. Moreover this refined and fine grained view was capable of separating evidence of variations among the commonalities and evidence which was disconfirming in nature.

In taking ahead analysis of interviews, the process of systematically searching for recurring themes and issues was helpful in ensuring that clear and consistent criteria were identified for later elaboration about the types of ways in which teachers completed their teaching and assessment practices. This process was aided by noting the frequency with which particular words, phrases and similar points occurred. Furthermore, analysing interviews in this way was a beneficial approach for clarifying with teachers that an accurate interpretation of their views had been drawn when

completing future interview visits. The systematic approach outlined above was also capable of highlighting variations between teachers in their views on teaching and assessment. Consequently, conclusions drawn benefit from a reviewing of interview transcripts which was open to searching for variations within the consensus view as well as identifying disconfirming evidence which was contrary to the consensus view.

As well as ensuring that interview interpretation was valid it was important in my position as researcher to recognise the influence my own professional background could have on the conduct and completion of interviews. Most notably it was necessary to appreciate that my role from 1995 to 1999 as Principal Examiner for Higher level Physical Education could influence responses unless interviewees recognised that my role was one of field researcher and not one which was representing an examination body or other stakeholder organisation. As well as explaining this distinction in letters of invitation to join the research programme it was important that this was apparent to interviewees during interviews as well. Accordingly, it was necessary that questions were asked in an open and enquiring manner which was free from inference and / or accompanying facial gestures which might imply that a particular viewpoint was desired or undesired. This approach required as well to be maintained when listening to interviewees responses. Consequently, irrespective of the viewpoints offered it was important to remain attentive yet neutral in expression when listening to the comments being presented.

Despite the potential disadvantages of fulfilling a research role in a subject area where one was previously the Principal Examiner, there were also some advantages to the situation. For example, it was helpful that the majority of the issues linked to the introduction and development of policy were familiar to the researcher. This was beneficial during interviews as interviewees' elaborations about teaching, learning and assessment could for the most part be understood and responded to during interviews. This enabled the nuances and complexities of the challenges associated with the

introduction and development of examination awards to be teased out and captured in ways which would have been more difficult if the interviewer was unable to respond with follow up questions during interviews due to a lack of familiarity with a range of policy implementation issues.

Overall, therefore, the analysis approach adopted contained the capacity to identify and report on both contrasting and confirming data. For example, in schools where contrasting teaching, learning and assessment approaches to those advised in the Course rationale were enacted, the analysis approach undertaken was flexible enough to avoid discarding accompanying teacher explanations of professional practice. As such, further questions were asked so that a more complete understanding of teachers' decision making occurred. By adopting this interpretive approach the multiple voices discussing a range of matters relating to the central research question were included in later analysis. Accordingly, the requirement to cover a full range of selected topics was fulfilled, as was recognition that it would be inappropriate to provide an extended commentary on all possible matters relating to the central research question.

In summary, while it is recognised that the research approach adopted was not entirely a bottom up model of research due to the author's related professional experience and the requirements of the model of teaching and learning being put into practice, the research approach adopted did try to guide and inform the analysis process when data which emerged from teacher and student interviews was reviewed. This approach aimed to ensure that later analysis and reporting was unaffected by the authors' previous professional roles and experiences and as free from personal bias as could be achieved.

Nevertheless, as acknowledged earlier (4.3.1) it was recognised at the outset that a limitation of the methodologies adopted was that it was only discussions of teachers' practices which were recorded rather than observations of teaching combined with discussions of practice. As it was possible that

there could have been a lack of fit between teachers' discussions of practice and the teaching practices which actually existed this is a limitation of the research. However, as the main intention of the research programme was to ensure that findings contained the capacity for wider inferences to be drawn, it was considered more beneficial to include a wide and representative sample of schools from a range of geographical and social circumstances than it was to focus more narrowly on collecting observational data and teachers' discussions of practice from a smaller number of schools.

- **Specific research approaches**

Turning to consider the qualitative research methods used in the research it is necessary to comment further on the specific procedures which were completed to ensure that the analysis approaches adopted were valid. The following explanation is designed to provide a sequenced description of how careful interview interpretation was achieved. Following interviews the taped and transcribed interview data along with the field notes collected during interviews were analysed in terms of the major issues and themes which occurred during interviews. The review of data involved repeated reading of interview transcripts with emerging issues being referenced against the broad range of teaching, learning and assessment challenges previously identified in earlier chapters. Thus, the identified categories of meaning had both an internal and external component (Dey, 1993); internal in that the categories identified related to the data collected about the central research question and external in that the categories connected to previously identified curriculum, pedagogical and assessment issues. The thoroughness accompanying the completion of these analysis procedures ensured that subsequent interpretation of data was based on findings which represented closely the perspectives of the teachers and students interviewed.

This process was aided by the sampling procedures previously reported and also by the steps taken to ensure that my previous professional experiences and responsibilities in this curriculum area did

not skew and infringe upon analysis matters unnecessarily. Through being alert to this possibility happening, it made it easier to check that selective analysis was not occurring and that comments from across the range of participant interviewees were included in the subsequent reporting of findings.

The following illustration provides an example of how practical experiential learning was taking place provides an account of how thoroughness occurred during interviews. In HSPE the intention within the rationale is that experiential learning will take place in practical learning environments in Games Halls and the like. However, a feature of interview commentary was the frequency of reference to time spent in classrooms. Accordingly, follow up questions asked in more detail about precisely how time was used in classrooms with later review readings of interview transcripts enabling an accurate picture of events to occur. This was important as it very often revealed that some schools were using classrooms only in the sense of making use of the only space available for completion of written personal performance diaries and such like. In these schools it emerged that Games Hall were often not equipped with benches to support writing on or whiteboards to record key teaching points. By contrast, a different picture of time in classrooms emerged in other schools. In these schools it was reported that often time was deliberately devoted to classrooms frequently for entire lessons on a fixed basis as this was viewed by teachers as the most beneficial place for learning to occur.

In addition to ensuring clarification of meaning during interviews it was necessary to ensure careful interpretation when analysing data after interviews. The following illustration is designed to highlight how repeated readings of transcripts was necessary in order that the data collected could be interpreted with regard to the central research question and also in conjunction with the identified curriculum decision-making challenges facing teachers. During the second teacher interview teachers were asked about how well students were responding to their teaching in terms

of their motivation, ability to take responsibility for their learning and in sharing their intentions in learning. When reviewing interview transcripts it was necessary that care was exercised in ensuring that general factors such as enjoyment, behavioural compliance and the ability to work cooperatively with others were not confused with how well students were responding to the precise integrated learning aims of HSPE, with all that this entailed for progressive analytical enquiry and for taking on ever increasing responsibility for learning. In order to check the thoroughness of findings, transcripts were reviewed to check on what evidence existed to support teachers' claims of when progressive analytical enquiry and increased responsibility for learning were occurring.

A further area where validating the research procedures adopted was necessary was with regard to how the oral assessment interviews were completed. For oral interview evidence to be compared with written assessment evidence, it needed to be recognised that one of the main distinguishing features of oral assessment i.e. interviewers use of prompts when repeating or rephrasing questions were not to be overused as this would make comparisons of oral and written assessments more difficult to confirm. Accordingly, in preparing for the oral interviews, colleagues completing the interviews were alerted to this feature and other major differences between the different forms of assessment. For example, colleagues were made aware that the 'leave and go back' strategy common in written assessments is not available to students in oral assessment interviews.

Therefore, colleagues would have to use their professional familiarity with the content knowledge associated with the questions as an indicator of when to proceed with further interview questions. In Chapter Seven there is additional elaboration on the broad range of issues which are associated with measuring the accuracy of oral and written assessment instruments (7.2.1).

Chapter Five: RESEARCH PHASE ONE (2000-2001): THE EFFECTS OF AN INTEGRATED CURRICULUM MODEL ON TEACHERS' PEDAGOGICAL PRACTICES.

5.1 Introduction

In earlier chapters analysis of curriculum integration and knowledge representation in practical learning environments and students' uneven levels of attainment in high-stakes examination awards revealed four central features of teaching, learning and assessment which could serve as the main reference points for a programme of progressive research. Accordingly, for this chapter, the four main research questions defined are:

- were teachers beliefs and values favourably inclined towards the rationale for HSPE?
- did teachers consider that they were adequately prepared for teaching HSPE in terms of their content knowledge expertise?
- how did teachers levels of content knowledge expertise impact upon their curriculum decision-making?
- how did teachers reconcile some of the specific challenges of teaching HSPE through the practical experiential learning approaches advocated?

5.2 Interpretation and Discussion

The following section reports on the main issues which emerged from each the four phased interviews with teachers and students during the first phase of research. The four central features of teaching, learning and assessment are employed as sub headings as an aid for clarity and structure in the following discussion.

5.2.1 Teachers' Orientations (Beliefs / Values)

Introduction

Findings from the three teacher interviews in each of the ten schools support earlier commentary about how PE examination developments had carefully considered teachers' preferred beliefs when

designing awards (Bilsborough and MacLeod, 1998; Sharp, 1990). For the majority of lead teachers it was their own performance background (mostly in games), which most influenced their intentions to become a teacher. Only two teachers (School 4 and 7) moved beyond such a justification to describe their desire to teach children as being particularly influential in their decision to pursue a career in education.

Teachers were also asked about the major influences which shaped their interest in becoming a PE teacher, for as Hayward and Hedge (2005, p. 67) note there is a need to understand teachers politically and emotionally as well as educationally if we wish to analyse the 'historical trajectories' which have influenced how professional views have evolved. Specifically, when asked to indicate which physical educationalist had most influenced the development of their own views eight out of the ten teachers cited a PE teacher at the school they attended as a pupil, the remaining two choosing lecturers at their teacher education institution. This pattern of findings supports occupational socialisation evidence from Curtner-Smith et. al. (2001), which indicates the relative narrowness and 'conservative' reasoning that often influences young people in joining education programmes to become PE teachers.

Nevertheless, despite the potential difficulties this might create for the adoption of productive teaching approaches, there was no evidence of 'knowledge disavowal' (Ennis, 1994a, p.164), or evidence of teachers who were 'resistors' to HSPE (Faucette, 1987). There were, though, some teachers who could be described as 'conceptualisers' (Faucette, 1987) i.e. they agreed with the rationale for HSPE, however, they did not consider that they possessed the required content knowledge expertise to make effective curriculum implementation decisions without further assistance. One lead teacher (School 6) stated:

I quite enjoy it. It would certainly be nice to get yet another piece of paper to say this is the best learning and teaching approach. I mean you know immediately when it doesn't work

but it's too late, you've done it so you've got to make another approach. I can obviously see right away if they haven't got the practical part, but it is different to know whether they are learning enough about analysis of performance.

By contrast, in some other schools teachers could be described as 'assimilators' (Faucette, 1987), as they agreed with the rationale in HSPE and appeared to possess the required content knowledge expertise to make effective curriculum decisions. The lead teachers in two schools commented that:

I think it's been great for my personal development. I haven't read so much on the subject in years literally and it's been fantastic, it really helped me as an individual and as a professional
(School 9)

I'm not the highly organised person I would like to be but I'm a deep thinker and I think carefully about what I'm doing. I could teach parts of the course off the top of my head and others I refer to the unit plans (support materials) before I go into the Games Hall, and it's like a refreshment making sure that on the major points the children need to know that I've jotted down the major issues to answer a particular question.

(School 10)

Overall, there was recognition by many teachers of the new challenges involved and the increased expectations which were now part of teachers' professional role. Typical of many comments was the lead teacher (School 7) who stated that:

Does Higher actually get much more profile than it should be getting, possibly it does and that's why my own staff will say to me "you're going overboard", but you've also got to look at it and say to yourself the kids who do Higher are doing it because they want to further their career, this could be something they'll follow or use to get into university as opposed to the kids who play in the volleyball club or the football team.

In order to comprehend the scale of the challenges involved in implementing high-stakes examination awards more clearly teachers' values towards HSPE are now discussed alongside evidence associated with the VOI framework (Ennis and Hooper, 1988), which has been widely used for measuring the influence of teachers' values on teaching and assessment practices.

Value Orientation Inventory (VOI)

The references in the HSPE rationale to teachers using ‘critical and imaginative practice in order to achieve an understanding of performance and the ways in which it can be improved’ (SQA, 1999c), link most obviously to the ‘Disciplinary Mastery’ (DM) and ‘Learning Process’ (LP) value orientations (Ennis, 1992a) as these teachers particularly value proficiency in performance (DM) and the benefits of problem solving and of linking new knowledge to existing knowledge (LP). Thus, teachers ranking these orientations highly would have the closest link between the objectives embedded in the rationale and their own beliefs. Table 11 illustrates the ordering of teachers’ answers to questions about different value orientations. It is apparent that many teachers valued DM and LP orientations highly with support for ‘Self-actualisation’ (SA) generally above that for the other two value orientations, ‘Social Reconstruction’ (SR) and ‘Ecological Integration’ (EI).

Table 11: Details of the School, Higher Still Physical Education results profile and value orientation of the lead teachers.

School	Attainment	DM	LP	SA	SR	EI
1	Poor attainment	1	4	5	3	2
2	Modest attainment	1	4	3	5	2
3	Poor attainment	3	1	2	5	4
4	Poor attainment	1	4	2	3	5
5	Modest attainment	1	3	5	4	2
6	Modest attainment	4	3	4	1	5
7	High attainment	1	2	3	4	5
8	High attainment	1	2	3	4	5
9	High attainment	1	3	2	4	5
10	High attainment	3	1	2	4	5

Only teachers in Schools 3 and 10 rated LP higher than DM in their value orientations. The teachers at these schools commented that:

What we're doing is we're asking the kids to develop skills, but we're also asking them about knowledge and understanding, about how do we learn and what is the best way to learn and when you include all these elements together, for me it is a greater holistic education. The kids are actually starting to think about Physical Education in terms other than just practical. So from that perspective, I think it is very, very good course.

(School 3)

I focus quite a lot on problem solving and using the cycle of analysis so everybody will find a problem in relation to performance in one way or another ... Designing the performance improvement programme is going to be a major knowledge and understanding factor of the course. We can't do that until they've grasped the concept of what it was they were investigating...

(School 10)

For these teachers, knowledge of performance-related concepts was not some inert theoretical unit of work, but a body of knowledge which could be accessed from practical learning environments as intended in the HSPE rationale. Most other teachers rated disciplinary mastery (improving standards of performance) as the most important objective to aspire towards. Typical of many comments was a quote from one teacher who stated that 'I'm very comfortable with the course as long as it's performance driven. If it ever takes a route away from that, if it ever goes down the English (A-Level) route then I wouldn't be at all happy with it' (School 8). When asked about whether a contrasting 'knowledge for knowledge sake' course would be of interest the same teacher replied that:

No, not really. I don't think it would appeal to the children. They're quite happy to participate in things and have knowledge linked to it but they want to do the participation

bit. The driving force for coming in is not that they're going to improve their knowledge base. The driving force for coming in is that they're going to improve their performance base.

(School 8)

Yet, despite many teachers' general agreement with the HSPE rationale, for one of the two teachers (School 3) who valued LP most highly, there was difficulty in transferring the rationale into effective teaching and learning practice. The teacher commented that:

Frankly, I'm very disappointed with student responses and part of that problem is the huge gulf between what we expect at Standard Grade level and what we expect at Higher Still. It's too big a jump for too many students. Basically at Standard Grade level, it's very straightforward, but we're taking them into Higher Still where we're expecting them to do things like produce a 1500 word investigation. Even when it's broken down into its component parts, they still find it very, very difficult. Some of them lack the PE vocabulary. They don't understand the concepts because, although they've been taught at Standard Grade level, it's been too superficial, there's not been enough emphasis placed on knowledge and understanding and evaluating. So as a result, when they come to Higher, we have a really hard uphill struggle with that.

Overall, the range of influences which might adversely affect the quality of teaching and learning and attainment standards realized provides evidence that while teachers' sympathy and commitment towards the rationale is desirable, it is no guarantee that the type of teaching, learning and assessment practices advocated can necessarily be implemented in the ways expected. Nevertheless, despite growing awareness of the challenges of teaching HSPE, the majority of lead teachers were pleased by the support received from the schools' Senior Management Team (SMT). In only one school (School 3) was there a perceived lack of SMT support. This manifested itself in poor

timetabling arrangements, having to accept students who were not considered suitable for the award, limited finance for purchasing resources and poor attitudes towards staff attendance at in-service development opportunities.

More problematic however was support from other PE teachers, with only some teachers benefiting from the positive support of other colleagues. Positive support was a particular feature of schools 9 and 10, but was a far less apparent feature in schools 7 and 8. In school 8, however, this arrangement suited the lead teacher who was interested in teaching HSPE year-on-year, and to a lesser extent teachers' in school 7, where two teachers shared responsibility for the award each year. Only in school 3, where course management arrangements were reported as poor, was there little apparent sense of collegiality at either SMT or PE department level.

Elsewhere, many teachers cited lack of time and workload considerations as influential in influencing their views of HSPE. One teacher (School 4) who valued DM as the highest value orientation and LP as only the fourth highest value orientation, considered that time and workload limitations affected the development of performance and commented that:

We can't probably take them to the levels we could if we had more time to spend on it (Performance) ... I don't think there's enough time to stretch the really able kids and we kind of rely on their ability and I think it's a time thing ... I'm not convinced that there's enough time for the less able kids to do this as well as they could.

However, as Thorburn (1999a, p. 25) has commented 'Many students begin their Higher PE at a Performance standard that is already considerably above that which they are ever likely to attain in their AP work, even by the end of the course.' Thus, time and workload issues are most evident with regard to the complexity of the integration challenges posed by merging Performance and AP and in fulfilling the assessment requirements of HSPE rather than with regard to improving

standards of practical performance. In the light of the integration challenges posed it is perhaps telling that the same teacher (School 4) also observed that:

I do feel that the children are disappointed with the amount of written work that's involved in the course and although you tell them over and over again, they definitely feel what we do is an English exercise. And we're very much aware of their English performance at Standard Grade before we actually encourage them to take part in the course and we try to dissuade children from doing Higher PE if the English department says 'look they haven't got a chance of getting Higher English' because 50% of it's English exercise. Their ability to write influences us greatly.

Clearly, the extent to which these integrated learning challenges can be overtaken remains a real pragmatic concern for many experienced teachers. Consequently, outlining to teachers with DM and LP value orientations how coherent teaching approaches can help students move beyond considering written AP examinations as an 'English exercise' (School 7) is an important step in delivering practical workshops with a problem solving focus (SQA, 1999c). Accordingly, the specific curriculum decision-making factors which influence the use of practical learning environments as the context for teaching and learning are analysed in greater detail later (Chapter 5.4). In addition, because of the importance teachers attributed to time and workload concerns the concluding chapter will consider the importance of these findings for the immediate future of HSPE.

The status of Higher Still Physical Education

Some teachers commented that the balance of time between teaching examination awards, teaching other classes and managing their extended school day (extra curriculum time) responsibilities required review, for as one teacher (School 6) commented:

All my free periods are for Higher. I feel like I'm maybe neglecting other things I could be doing with my other classes. I still find time for extra-curricular but it's quite a strain when you think you've got all this stuff to do and then we're going away with the hockey this weekend.

Similar comments arose elsewhere, despite the fact that (apart from School 3) each school's SMT had made a considerable staff investment in HSPE; for example, in schools, 2, 4, 6, 7 and 10 two staff had been allocated to one single class (maximum 20 students) for the entire session; staffing allocations far in excess of the normal teacher to student ratios for higher level work. So, while at face value there appears to be a belief and commitment towards the rationale for HSPE, it might well be that there was only a partial recognition of the professional practice issues associated with teaching and assessing the award.

Of related importance in this respect it was noted that only one teacher (School 10) considered they would not necessarily have enjoyed HSPE when a student at school. Interestingly, the lead teacher was also one of the two teachers who indicated that LP values were of greater significance to them than DM values. These value preferences appear to reflect the lead teacher's predominant concerns regarding how best to construct appropriate learning environments for HSPE and their additional concerns about whether students were appreciating or not the benefits of experiential learning. The teacher (School 10) commented that:

I think that is a terrible thing to say because I was manic about sports at school, but like all PE teachers probably dreamt about performing more than they did about writing. I would have found the written work a struggle at school because I was not a high academic student. It took me a little while to get round to that, but I did eventually. I would have found the theory of it daunting and I can see myself in some of the Intermediate 2 students who are verging on Higher. Maybe by sixth year I could have got my head round it and managed it

but you have to have a good work ethic and I'm not necessarily sure if I was that kind of student.

However, despite the difficulty of balancing the demands of different types of PE programmes, most teachers displayed enthusiasm for working with students on examination awards. One teacher (School 8) noted that:

Initially, I would have agreed it (certification in PE) was forced on the profession. I think it was a politically driven birth but I think once we got into it as a profession we have grasped it ourselves and realised the importance of it. And if you want to take kids' performance level forward surely it's a good idea that we give them more time and more in-depth study.

Such a sense of curriculum ownership reflects the intended curriculum design process in Scotland, where for the most part it is anticipated that teachers will take on a degree of active responsibility for the design of the curriculum and not just the delivery of it (Humes, 1999). Crucial however to this process working effectively is checking that teachers believe in the value of the awards they are teaching (Ennis, 1994a; Carlgren et. al., 1994). Consequently, teachers were questioned in greater detail about the specific value of examination awards.

Teachers perceptions of the rationale for Higher Still Physical Education

Overall, there was a high level of agreement with the rationale and the potential for improving performance through analysing performance. One teacher (School 8) commented that:

Our senior girls, volleyball, won the (County) Senior title last Friday. They have been trying to beat (another school) at the same age group for a number of years. We beat them quite convincingly by 29-18. One of the girls worked on setting, she is a specialist setter and her investigation was on improving her setting techniques and linking with players and choosing the right options and she really did think that her performance had improved

immensely, because she had a much clearer understanding of what a good setting does. So, it does make a difference.

Only one teacher (School 10) was more guarded and declared that 'If you have first understood what the key concepts were before you started'; comments which indicate that the initial attractiveness of the rationale needs to be matched by students' sound grasp of underpinning content knowledge for improvements in practical performance to occur.

Turning to the students' perspective (gauged during school interviews), all students considered that by analysing your performance, practical performance abilities would improve. However, detailed definition and elaboration about how precisely this occurred was often a little difficult to explain. One comment, typical of many, from a student who had already achieved an 'A' pass award in session 1999-2000 (School 9), was that:

I thought analysing it, breaking it down, fixing the things that were wrong and then trying to build it all up again made everything so much easier. Once you've analysed it and you're saying well I'm doing this wrong you can get more critical and you actually start to think. In observation at first, you think I had a not bad game I scored like loads. Then you look at your observation schedule and you were walking for the last twenty minutes. But, at the end you would look at the observation schedule and see pretty much the same thing as you thought.

Despite these instances of students' explanatory difficulties about the process of learning, there was evidence nevertheless that empathy with the rationale for HSPE had brought about renewed interest and engagement in teaching for some teachers. One teacher (School 8) commented that:

It's probably the only thing that really interests me these days. I get bored with the other classes pretty quickly these days. I don't think it's a challenge. The Higher class is always a

challenge and you're constantly thinking of better ways to do things if things didn't work. You constantly try to draw it out of them, to get them sort of note making, small discussion groups, coming up with solutions, helping, giving advice.

In a similar vein, another teacher (School 10) commented that:

I think from my personal point of view you get to work with the most intelligent, talented children in the school. I've wanted this for years. I hated teaching third year bottom set children who were just doing an elective in PE. They didn't really want to be there, they just chose it because they thought it was an easy option and they'd be with their friends. The challenge to get them to do anything was the biggest challenge, and it was so frustrating for somebody who obviously clearly loves their subject. I'm sure there were times (in HSPE) when I thought I'm not sure what it is I want to teach them because I'm not sure of the content of what I'm delivering but I'm happy with them in front of me and I'm going to reap their responses and some of them were absolutely awful and some of them were brilliant, but we were in that position where we were gaining knowledge.

The more positive aspects of these reflections highlight the importance of teachers' developing favourable perceptions about their own self-worth and adequacy in their new teaching role (Schempp, 1986); a factor which appears critical if teachers are to merge effectively individual students' engagement in the learning process while retaining adequate whole class control (Griffey and Housner, 1991). The lead teacher in School 9 commented on how achieving the balance between individual and whole class teaching was instrumental in developing his own level of confidence for teaching HSPE. The teacher reflected that:

We did a lot of guest appearances (by sports coaches) and all these wee carrots help. Things that make folk think that this course is actually alright. So I think it's important that for me, that as an individual and as a principal teacher I'm man enough to say I'm weak here, I've

got to go asking for help. We managed to get a lot of early funding therefore we've got a good library set up now which we can tap into: and in terms of my own personal and professional development it's been great. I find now I enjoy the atmosphere in the Higher class.

However, further evidence of the complex nature of PE values was again apparent, when the same lead teacher commented during the final interview, that despite his enthusiasm for HSPE 'I think for too long we have been hammering the academic side of things'. Hence, it was testament to his professional practice (as evidenced by the responses of students) that this particular teacher was committed towards achieving high levels of student engagement and attainment, at a time when his own values were questioning the current prominence of examination awards in PE.

School arrangements and student feedback about Higher Still Physical Education

Most of the lead teachers had some input into which students could select HSPE. Progress in English and to a lesser extent Mathematics was considered to be at least as significant an indicator of potential to work at Higher level as anything connected with the previous study of SGPE. The key issue reported was that while students could mostly make the performance progression required between SGPE and HSPE level, the written examination challenges in AP were much more likely to prove problematic. Indeed, many teachers reckoned that the potential to pass Higher level English was more than adequate compensation for not having taken SGPE at all. This belief influenced how teachers used the different levels available within the overall Higher Still framework to accommodate different student abilities. One teacher (School 10) commented that:

The two questions I ask students are whether you are outstanding in any particular avenue of sport performance and what did you get in your English? Usually that's as good an indication of whether they've got an opportunity of passing or not. There was one boy on our course who ought not to be there: and it's a difficult situation because he is not a

discipline problem but his performance in the written aspects is below Intermediate 2. I was not presenting Intermediate 1, at least I didn't have the intention of and so he will be the only candidate. I suppose the beauty is that there is a level for everybody and he should get an award at Intermediate 1 even though he's a Higher performer.

In most cases student feedback evidence reflected well on the commitment shown by teachers towards student progression and well-being in HSPE. Students from all of the ten schools talked about the positive relationships and friendly rapport they enjoyed with teachers; endorsements which were greatly appreciated by teachers and students alike. A typical teacher comment (School 7) was that:

What pleases me every year is that they don't wait till they get their results, there are two or three students that will come in with a box of chocolates, I don't know whether it's their parents that are doing this but the kids, they know that we've put a lot of work in with them so the feedback from them is "listen, thanks for all your help" and that one wee thank you is enough.

While at School 9 one student noted that 'he would come down and meet you at lunchtimes and give up every bit of spare time. Because he was that willing to help we thought well if he's doing this for us we should at least return the favour and get the homework done for him.

Despite students' interviews revealing the positive commitment shown by teachers towards student progression it was noticeable that only one school (School 8) asked students for written feedback about their impressions of the course. However, the questions asked were about levels of enjoyment and participation, favourite activities and the like, rather than on levels of learning or any areas of conceptual difficulty experienced. Thus, despite the intentions shown, the potential benefits of analysing student responses about the challenges of learning through an integrated curriculum were largely missed due to the superficial nature of the questions asked.

A similar level of surface analysis was also apparent when discussing inter-school and inter-department comparisons of student attainment with teachers. Thus, while school comparisons and school league tables were at this time a feature of secondary school reporting, teachers remained unconcerned about their own pass rates relative to other schools. The lack of an advisory service, which in previous years might have provided examples of best practice, and supported lower achieving schools within local authorities, might be a significant loss in this respect (Brewer, 2003). Many teachers, however, had developed some informal networks with trusted colleagues, and this had led to the sharing of some resources and to exchanging feedback with colleagues.

Summary

The main point to emerge from an examination of teacher beliefs about HSPE is that the rationale met with the broad approval of most teachers. These findings might have been anticipated from past Scottish commentary on teacher priorities (Sharp, 1990). Furthermore, as the positive endorsement from students for the professionalism of teachers indicates, there was a clear concern for the quality of students' learning experiences, assessment progression and general well-being. Consequently, what was happening in practice could not be easily explained away as an example of an educational innovation, which was let down by clear teacher inefficiencies and lack of belief (Solomon, 1999). Therefore, the profile of assessment results occurring is more complex to analyse as implementation was proving problematic and something of a puzzle to unravel. Put simply, something appears not quite right, even though problems appear more to do with other challenges than those associated specifically with teachers' values and beliefs. Accordingly, a close examination of the operational challenges posed by the three other identified central features (knowledge expertise, curriculum decision-making and pedagogical content knowledge) is now required in order to attempt to understand in greater detail the imbalance in the levels of attainment achieved by students.

5.2.2 Knowledge Expertise

Content knowledge expertise and use of curriculum materials

Many comparisons of expert and non-expert teachers (Schempp et. al. 1998) have highlighted that there are few differences between teachers in how curricular goals are set and learners' prior learning experiences evaluated, but that there are differences in how curriculum materials are used. Schempp et. al. (1998) noted that a characteristic of non-expert teachers is they spend a greater amount of time in lesson preparation than expert teachers do. In HSPE many teachers praised the development of curriculum support materials (HSDU, 1998a; HSDU, 1998b; HSDU, 1998c) but also noted that reviewing these materials increased lesson preparation time. As such their production could be viewed as both a strength and a weakness: a strength as assistance exemplified how examination content could be covered but a weakness in that it highlighted the unease among teachers about how content coverage could feasibly occur.

Both teachers in School 4 commented on the time difficulties associated with planning, even though the teachers were timetabled together to teach one class throughout the entire session. Nevertheless, the teachers (one male, one female) considered that:

I have to say the support materials have really been helpful because they give you a picture, a template you can work with. But there is a real pressure all the time. (My colleague) spends ridiculously unreal amounts of her free time helping these (HSPE) kids. She has interviews at lunchtime, at interval, after school, during contact periods, which I don't know if other schools do but it's an overwhelmingly imbalanced amount of time these kids get spent on them. (M)

I don't know how one member of staff teaching on their own copes with it because we do it together. I'm spending every night at home working on Higher to the detriment of

everything else we're teaching which is wrong. At least we've got each other to throw ideas off but the amount of content you've to get through in each of the areas is so vast. (F)

Thus, in the majority of schools, workload comments were discussed largely on the basis of how to cover the width and depth of examination content with only a few teachers taking active steps to review materials other than those formally provided as official support materials. One of the few teachers (School 10) who did so commented that 'I've learned so much about PE in the past two or three years it's unbelievable, I've forgotten a lot but I'll learn it again but it's this aspect of not settling down to any one pattern which is great.' While this level of personal investment in learning is encouraging, one other teacher (School 9), who had made a similar extended commitment towards their own professional development, recounted how problematic it was proving to interest younger PE teachers in their department to take on responsibility for teaching HSPE awards in the future. This was due to the perceived scale of the challenges associated with adequately covering course content knowledge.

During the development of HSPE the transmission based cascade model of in-service training was used with seven days of national training between 1998 and 2001 being provided on a one teacher per school attendance basis. The intention was that the teacher attending would pass on details of the day to other (perhaps younger) PE teachers in the department. For the implementation of Higher Still more generally Raffe et. al. (2002, pp. 182) commented that 'information did not always flow freely' and that this tended to ostracize practising teachers who were responsible for implementing proposals. This appears to match the position within PE where Brewer and Sharp (1999, p. 542) note that the model of in-service training lacked 'sympathetic support' and overall smacked of 'de-professionalism'.

Despite concerns about implementation timescales and the effectiveness of cascade-based training days the lead teachers remained, to varying degrees, committed towards running HSPE awards, even though delivering awards was clearly perceived as a considerable additional responsibility and professional challenge. Only occasionally, however, was there any evidence that a wider form of professional development had influenced teaching and learning; a factor which Schempp et. al. (1998, p. 351) assert is important if teachers are to fully seek out 'unique and innovative ways' of maximising learning. The lead teacher for School 10 had tried to connect student centered learning issues with the pragmatics of HSPE delivery and commented that:

About two years ago we had a seminar in the school from 'Mindstore' and it was about looking at how folks learn things and about giving them the big picture. We tend to give kids bits and pieces, it's like a jigsaw, you give them all the bits, but you don't show them the picture. I actually changed what we do as a result of that, because I thought it made a lot of sense, and we now give them the complete picture of where they're heading in each part of the course. This is where we are starting, these are the steps we're taking and this is where we're attempting to go.

However, such comment was atypical. The major focus of teachers' reflections was on shorter-term issues which presented themselves immediately rather than on a more overarching review of how to construct an integrated teaching and learning process. This is unfortunate for as Schempp et. al. (1998) highlight, expert teachers are typically much more likely to be concerned about how learning resources are received by students, and the effects learning experiences have on students' motivation than on their own immediate implementation concerns.

A key shorter-term implementation issue was deciding which practical activities should feature within awards. The Arrangements document (SQA, 1999c) outlines that two activities is the minimum necessary at Higher level. Two schools offered an either/or selection policy to try to appeal to different student interests. However, most schools selected three activities, in line with

most schools nationally (SQA, 2000b; SQA, 2001b; SQA, 2002b). Furthermore, the activities selected were typical of the relatively narrow range of activities which are pursued nationally, with all apart from one school including badminton and all schools including either basketball or volleyball (Table 12). Considerations such as access to reliable school indoor facilities and time available within the school day appear to be the defining influences on activity selection. In a few schools there was a link between HSPE activities and those sporting activities which featured prominently as part of the extended school day provision.

Table 12: The activities included in each schools HSPE course in 2000-2001.

School	Activity 1	Activity 2	Activity 3
1	Basketball	Badminton	
2	Basketball	Badminton	
3	Basketball	Volleyball	Football
4	Basketball	Badminton	Hockey
5	Volleyball	Badminton	Gymnastics
6	Basketball	Badminton	Swimming or Football
7	Volleyball	Badminton	
8	Volleyball	Badminton	Hockey
9	Basketball	Badminton	Football
10	Basketball	Badminton	Dance or Football

Thus, there was little evidence of negotiation with students about which activities to include as is expected in the curriculum guidelines (SQA, 1999c). This was of no particular surprise to most students who had no great expectations that anything other than a teacher prescribed model was possible and voiced little overt disquiet about lack of negotiation. Overall, the level of pragmatic planning associated with the selection of activities does indicate that limited department upheaval was considered desirable and that factors such as teachers’ expertise in different activities and the feasibility of the integrated links between different activities and different areas of AP were of secondary rather than primary importance in the planning process.

Integrated teaching and learning

Given the degree of teacher unease which generally existed about the scale of the planning challenges involved it is pertinent to review how teachers subsequently delivered practical

workshops with a problem solving learning orientation (SQA, 1999c). Specifically, what strategies did teachers use to improve the structural understanding of students (Jonassen, et. al., 1993)? For both teachers at School 4, these complexities were every bit as difficult to solve as the time management problems alluded to earlier. The teachers commented that:

If you want to apply knowledge and use it to improve your performance you've got to understand it or your performance won't improve, you can't just memorise it. I think we're right though to aim high. That has got to be part of the uniqueness of our subject. It's not just another memory test. The way I teach is like we'll do an experiential thing and if I see the need to go a certain way I'll go that route to make sure I've tried to crystalise the experience and then try and fit it into analysis of performance. (M)

But the children find it very difficult to experience something and then write it down in the way that the questions, or the way it's being asked for and you can say but we did that 'can you remember us doing that', 'yes', well write about what you did and they'll write in vague, bland, there's not a great lot of depth of detail to what they write until after all the practical is over and you spend two months going over the questions, then they get it. That's when they learn it. So, it's very difficult for them and if you ask them they're very confused. (F)

Many students reported (Interview 2, various respondents at each of the ten schools visited) that the knowledge structure in AP was difficult to comprehend and noted that the opening months of the award were particularly confusing as learning aims were unclear. One student (School 6) commented specifically that 'to begin with we talked a bit about things at some points, but once you starting playing you forgot about these things and just played as normal'. A noticeable feature of some teachers' practice (Schools 9 and 10) was the detailed course induction programmes, which were designed to help students become as familiar as possible with the rationale, expectations,

course design and intentions of HSPE. These were considered useful by the students in these schools. However, more generally there is a risk that teachers might understand these structural relationships, but that they remain poorly understood by students.

Despite this backdrop, there were some interview-based reflections from teachers about the new extended professional challenges involved in integrating Performance with AP and the importance these integration challenges had for the subsequent quality of students' learning experiences. One teacher (School 9) commented that:

At Higher level if you don't give them the bigger picture at the start then they have no real concept of what part they are working from. There are some really talented children in the class that look forward to it, but then they see what the other 50% (AP and IP) is all about. They are struck by a little bit of wonderment and appreciation that there is something bigger there. At the same time, they're thinking I'm not sure if I really want to do all this. It takes some of them a few weeks to get to grips with the concept of what they are doing and others just don't cope very well at all.

In another school (School 10) the lead teacher considered that the extended nature of the integration challenges required a shock type initiation. The teacher commented that:

What I do is give them a few questions within the first couple of days. I say 'I'd like you to write me an answer, you've got half an hour.' And leave them to, and I give them the books. Look through the books if you think you need them, just write down what you think. And then I'll go over what would be an acceptable answer. And then we can work through what's required to get there. The majority of them will be able to handle this type of information. So it's really just encouraging them to make sure that they're well organised, and that they recognise where the information is that they require. But, in a large group it is problematic, there's no doubt about it.

These pedagogical comments are consistent with earlier commentary from the same teacher who declared that improving your performance abilities through analysing performance would be dependent upon understanding what the key concepts were before you started. For most other schools however the integration challenges posed in merging Performance with AP led to practical experiential learning approaches being adopted from the beginning of the course. Thus, while such approaches reflect the HSPE rationale (SQA, 1999c) they may run the risk of students attempting to develop an applied procedural knowledge which is not adequately supported by declarative security about the key concepts in AP. This is problematic when an applied procedural knowledge is supposed to link to individual learning targets for each student.

In trying to connect declarative and procedural forms of knowledge with individual learning targets most teachers tried to establish structural links between students' own performance data and the content knowledge defined in the key concepts. The most common mechanism deployed for developing these links was through cycles of analysis (HSDU, 1998a; HSDU, 1998b; HSDU, 1998c). The difficulty with these attempts is making individual as well as group connections with the key concepts in the different areas of AP. For example, within the key concept titled 'Physical, Skill-related and Mental Aspects of Fitness' each student is required to collect their own personalized fitness data before discussions with teachers about their own performance improvement targets begins. Despite the strong staffing support evident in many schools teachers reported that this was a difficult remit, which was adversely affected by large class sizes.

Teachers in Schools 7 and 8 were particularly committed to collecting data which was personalized throughout. The lead teacher in School 8 highlighted how the high performance standards typical in their school were beneficial for developing related analytical skills through regular use of peer observation, reviews of video footage and scrutiny of observation schedules. In School 7, the lead

teacher used a quick speed video copying suite to furnish each student with a copy of their volleyball performance. This enabled students to assess their own performance strengths and weaknesses. Overall, these data collecting procedures were considered by both teachers (Schools 7 and 8) to have transferable benefits for the IP. For many other teachers the IP attracted animated commentary due to the associated workload issues involved. However, the lead teachers in schools 7 and 8 were in favour of the IP, and viewed it as a beneficial way of improving students' understanding of analytical processes and for securing assessment marks. Consequently, in these schools students began their HSPE awards by examining different methods of data collection before analysing how the key concepts (declarative knowledge) merged with analysis processes.

By contrast, in many other schools teachers commented that the initial task of trying to ensure that students understood about the key concepts associated with the different areas of AP was demanding enough in itself. Therefore, it was not until some time later that teachers found it possible to extend the demands of tasks, for example, through collecting personalised data or by asking more divergent questions rather than recall based questions (Hasweh, 1987). There were some examples of teachers who could elaborate on how they developed this type of task however as the quote below moves on to indicate, the need for control within a large class often necessitated the later use of more traditional reproductive teaching approaches. The lead teacher (School 10) described it thus:

I try not to go off the beaten track too much, because you can talk about anything and everything in relation to fitness, so it's very important that everything you give them is structured, so that it pertains to the type of answer that you would expect them to use in an exam. If you had 15 kids, it's not so bad, but when you're up to 22 then it gets a bit crowded you need to review how we are delivering the course. I'm looking at actually providing more overheads for them to copy down and that's not the way I would have liked to have gone to be honest with you.

The research has highlighted some of the complexities involved in making practical workshops a meaningful and sustainable medium for effective student learning. For this reason, in the concluding chapter suggestions are offered about how teachers could conduct through successive cycles of analysis a more authentic version of practical experiential learning. Additionally, research proposals are outlined about the benefits of investigating further the links between teachers' observational analysis and the development of teachers' analytical and discussion based skills.

Summary

In summary, many of the content knowledge expertise issues associated with HSPE indicate that the transmissive model of professional development, where lead teachers attended cascade style in-service training, has failed to meet adequately teachers' development needs. A more detailed examination of the professional challenges involved in HSPE might have recognised that the depth of content knowledge expertise required by experienced teachers posed a considerable barrier to the effective and authentic implementation of HSPE and was likely to impact upon their curriculum decision-making.

5.2.3 Curriculum Decision Making

Teaching, tasks and curriculum decision-making

For most teachers it proved problematic to develop students' critical thinking skills through the constructivist type approaches advocated in the HSPE rationale. Many of the problems encountered were attributed to students' inability to produce answers in ways which would be acceptable in a written examination. Teachers' perceptions were however that most students had through their performance-led experience developed a reasonable depth of underpinning content knowledge. This is problematic however due to the combined demands of the new content knowledge presented in HSPE and the requirements for students to understand explicitly the links between relevant key

concepts (Appendix 1) and the analysis processes involved in AP work. As noted earlier (5.2.2), many students found the overall structuring of knowledge within AP plus the opening months of HSPE to be difficult to comprehend. The impact of these difficulties on the construction of assessment answers is considered later (Chapter 7).

Many teachers reported that they had initially committed themselves to working as a facilitator in practical experiential learning environments, but had become increasingly concerned by students' lack of development in written AP answers as time progressed. The difficulty in creating effective and authentic practical workshops with the potential for purposeful ongoing social interaction and student discussion was a constant concern for teachers. Teachers remained uncertain whether through the process of collecting data students were actually developing the capacity to display deeper levels of understanding about the key concepts. Teachers reported difficulties in trying to make integrated curriculum connections between Performance and AP due to the unpredictability involved in working in genuine performance-led environments, where adapting to the naturally occurring moment-to-moment happenings made curriculum decision-making difficult. This resulted in many teachers attempting to establish links between Performance and AP in knowledge-led classroom-based teaching environments, which were perceived by many teachers as more certain and predictable.

Consequently, many teachers fluctuated between teaching approaches. The most common pattern was for teachers to commit themselves initially to working as a facilitator through practical experiential learning. Then, due to the increasing disappointment in the standards of students' written AP answers, teachers' response was to assume greater control over the teaching environment. One teacher (School 3) noted that:

....the best teaching style for me has been to make it totally teacher directed. I keep complete control on everything and the reason for that is the fact that I had a number of

students that are unsure of what they were doing and they require reassurance. They need me to point them in the right direction; and for me the best way to go about that is to take absolute control over the class and their learning.

Thus, it appears that pressures during the course were determining the methodology and, in turn, the nature of student learning experiences. The pressure placed upon teachers in terms of general workload, covering AP content and completing assessment procedures (half of which involved written assessment answers) was affecting their ability to adopt pedagogical practices which took much greater account of task definition and, crucially, time for learning to occur (Rink, 2001).

One consequence of teachers adopting restricted and often knowledge-led learning experiences was that it had an adverse effect on student motivation (student interviews, various respondents) as their clear preference was for practical led learning. One student tersely stated that 'you got practical if you did your work', evidence of student unease about the dichotomous theory/practical split rather than a continuing adherence to the integrated experiential-based approaches advised.

Clearly, the pedagogical complexities posed by HSPE ought not to be underestimated. The demands of merging Performance and AP, and of supporting the development of students' written work, as well as covering the width and depth of content knowledge necessary were all adversely commented upon by regularly by many teachers. A few teachers, however, expressed more positive views about the challenges of adopting the intended integrated teaching and learning approaches and the degree of consequent change which had taken place in their pedagogical practices. One teacher noted (School 9) that:

I've used an awful lot of small group work and reciprocal teaching. I've tended to do a wee bit less practice style and that in itself was quite daunting at first, it was coming out of the

comfort zone for me and it's appreciating that the kids do pick up things they do enjoy responsibility, they like the fact that you give them a task ...

It made me look at my own teaching methodologies very closely and I actually managed to tap into a couple of students who found this idea (constructivism) okay. I'm now getting that self-confidence to allow students to go away and try this and it's amazing in actual fact the results you can get if you trust the students and if you have high standards and if they understand exactly what's being asked of them. But I'm still finding it difficult, honestly that's perhaps a weak area in my teaching which I hope I'm addressing, it is very tough doing the outcomes (assessment) in a practical experiential mode all the time.

Thus, a few teachers were prepared to 'trust' students and show 'flexible control' (Griffey and Housner, 1991) as part of their curriculum decision-making when attempting to expand the range of teaching approaches adopted, and this had positive benefits for their feelings of self-efficacy in new teaching roles. By ensuring that students understood exactly what was being asked of them, these teachers were outlining from their pedagogical practices some of the key requirements set out for constructive teaching environments (Simpson, 1990), where links are established as necessary between each student's experiences (performance data) and selected areas of content knowledge.

However, scrutiny of the set of interview transcripts indicated that only a few teachers expressed the capacity to move beyond teaching approaches that were essentially re-productive to approaches that were productive. In one school where this occurred (School 10) the lead teacher observed that:

Most of my best teaching is done without a set plan, but you do have a main teaching issue to carry through. However, you have to allow yourself flexibility to move off a little bit to bring a point to its conclusion and then come back. It is difficult in a class context to do, but when they (students) realise that you're not actually teaching to exactly what is on the board,

they start to engage in conversation which is slightly off the beaten track, so long as you link it back to the main issues.

When asked to elaborate further on a particular lesson the teacher had considered effective in establishing the required connectivity between each student's own performance data and clearly identifiable content knowledge the same teacher (School 10) commented:

Usually I think it would reflect the question and answer situation where I'm getting useful responses from children as we go. And we would talk, we'd be interacting quite a bit, and then there would be a time where we would be recording our information so that it was solidly remembered. My best lessons are really those where we're talking about work that the children had done and issues that arise from it, but they would raise the issues and I would help clarify and then they would contribute as well.

Despite such a positive endorsement for practical experiential learning and the HSPE rationale, a note of caution is required, as both lead teachers in Schools 9 and 10 expressly mentioned that the student cohort for Session 1999 - 2000 appeared more capable at learning through problem solving learning environments than students from previous years. The lead teacher in School 9 commented that:

I think a lot depends on the group you have, like, last year was a very special group. I was able to give them a much looser rein and because they were mature, mostly sixth year, interested in me and the course, interested in the school and more importantly interested in learning for themselves. This year I'm finding it frustrating as they don't pick up things as quickly, and you always base it on your best group, which is wrong.

Additionally, the lead teacher at School 10 noted that:

I find that even children who did Intermediate 2 last year and gained an 'A', found the Higher course very difficult. I think there's still a little gap there, not in the practical sense but certainly in terms of improving their English, improving their organizational skills at home. That is still an issue, but I can certainly enthuse about the subject and the need for me to be interactive with them and support them.

The previous pages have highlighted many of the complex curriculum decision-making issues teachers face in embracing problem solving teaching methodologies; in particular what forms of curriculum decision-making are most likely to result in teaching approaches which encourage students to accept greater responsibility for their learning. Consequently, for this reason in the concluding chapter some suggestions are offered about the forms of continuous professional development opportunities which might be most effective for making sustained improvements in teachers' abilities to construct productive practical experiential learning environments. In the meantime it is now pertinent to analyse teacher and student commentary about the extent to which different teaching approaches influenced levels of learning.

Structural learning considerations and curriculum decision-making

When questioned on how students might feasibly take on increased responsibility for their learning, most interview commentary centred on the extent to which students' attention, motivation and levels of comprehension affected whether longer term learning gains were achieved or not.

One teacher (School 9), when discussing student attention and approaches for sharing learning intentions with students, commented that:

I was at a Principal Teacher's meeting recently and we all brought some things to the table, I looked at some schools and their documentation, it was a generic model it was called, it could be fitted into any activity you wanted whether it be basketball, hockey. There were twenty-one tasks for the kids to do, it was A4 tasks, it was as *dry as a bone* (emphasis

added), there was not any fun to it, it wasn't user friendly at all. I could not put up with it and neither would the students. They would not pay attention to this.

However, in School 7, it was the abilities of the teacher to sustain student motivation rather than necessarily comprehension which was most highly valued. The teacher commented that:

I'm going to put ourselves up a wee bit here. If the teacher can motivate, if the teacher can realise their attention is dropping, if the teacher knows these things, then in my book, it's down to the teacher. But in general, their attention is not something that worries me too much, because we just keep repeating things. You know, *if you throw enough mud at it* (emphasis added), then eventually some of it will stick.

Alternately, in School 10, it was the ability of the teacher to ensure high levels of comprehension which appeared to be valued most highly. The teacher commented that:

So, the picture would build from interaction with them. If you have a double period and you've been playing football and you've recorded it and you've watched half an hour of work and you've done some analysis of work, and then you raise issues about what the children have seen, what they have written down, and the quality of information required, in terms of collecting data. Then you would get some information from them verbally, and if we could link it to other aspects of collecting analysis. So, that would probably be an effective and interesting lesson.

In analysing the importance of these variables (levels of students attention, motivation and comprehension) on achieving deeper levels of learning, Marton and Booth (1997) note that a positive climate of mastery orientation and a desire to link learning with experience (as noted in the earlier 'comprehension' quote), is a characteristic of a deep approach to learning. Conversely, superficial learning strategies, based on repetition and following instructions to the detriment of

actively solving problems (as noted in the earlier 'motivation' quote) are likely to set in chain a downward spiral of events (Sizer, 1991). Therefore, confusion about how precisely teachers can deepen students' learning experience could result in potentially productive learning environments of long-term usefulness being jettisoned, if teachers perceive that some additional teaching intervention is necessary if students appear initially to have difficulty in seeing the overall picture of what is intended. One student (School 9) quote emphasises the continuing need to recognise that if increasing students' responsibility for their own learning is to occur, then adequate learning time in genuinely experiential-based environments is necessary. The student commented that: 'recently in basketball we were analysing passing patterns in small sided games and whether they were OK or not. You think it would be quite simple really, but actually it took a lot of time and we were a bit rushed to get it all done'.

Further student evidence indicated that as teachers increasingly resorted to direct reproductive teaching approaches and the use of classroom based lessons as courses progressed, that learning time away from practical settings became rather dull and restrictive at times (Interview 2, many respondents in each of the ten schools sampled). Typical of many, one student commented that 'If I'm sitting over there I'm bored, but if it's practical, I'm interested, I'm taking it in.' This type of student commentary raises concerns given the '*dry as a bone*' and '*if you throw enough mud at it*' type references, which accompanied some teachers' commentary, as these types of references might indicate a relatively restricted response to the complex task of designing individual targets for each student and for creating productive learning environments in general.

Setting individual and group targets and curriculum decision making

In general, setting targets for students to meet deadlines for completing homework and such like was viewed as quite straightforward; however identifying learning targets based on the improved conceptual understanding of key concepts was more difficult. One lead teacher (School 9) was particularly aware of the challenges posed by appearing to need control within the teaching

environment at the same time as flexibly seeking to identify and discuss individual learning targets with students. He stated that:

I think probably I've retained control a little bit, you know, timescale and responses and make sure their work is on time. That's where the control element comes in. However, making sure that the children are aware that you are entirely knowledgeable about what you are presenting gives them the comfort to say, yes I see what he's doing...I can see just what my role and responsibilities are in this class.

This type of commentary reflects wider research literature on the impact of teachers' content knowledge expertise on pedagogical practice, and reflects Elkins' (2001) views, in particular, about some of the opportunities which begin to arise for students if they can comprehend and follow teachers' talk. However, there was also contrasting evidence of problems emerging in trying to ensure that student answers were individually different. Some teachers' perceived need for tightly organised day-to-day class management procedures resulted in the development of set exemplar answers. One teacher (School 5) commented that:

You can't trust them even to turn up, even the brightest of children have difficulty in managing to get to school every day. ...I've found that giving exemplar answers to write down and then to head up the main points with them works best, at least then I know that they have answers that are similar to the sort of information required.

Given teachers' responsibilities towards achieving national standards of attainment it is possible to anticipate why teachers might devise these types of teaching environments even though they run the risk of reducing students' motivation and engagement for the award as well as creating the problem of many different students having very similar answers to the same question (Brewer and Sharp, 1999; Brewer, 2003).

Therefore, in these types of learning environments how teachers used extended school study to improve AP understanding and the individuality of student answers becomes important to consider. Most teachers tended to use marked homework as the major mechanism for providing feedback to students about how to achieve deeper levels of learning. In fulfilling these responsibilities, there was evidence of the extended professional demands some teachers were prepared to make of themselves in order to help students learn during HSPE. The lead teacher from School 9 observed that:

The last homework we gave them we got it in and we discussed it in the dinner hall laid on teas, coffees and some traybakes for the kids, money out of funds, not a problem and let them know, I treat you like adults, I expect it back from you. We also used a buddy system last year with homework where the girls especially would be partnered up with a boy perhaps and cross reference work, a lot of open book learning. We did a lot of very informal sessions over a cup of coffee in the dinner hall, where I'd be talking forth, we got the kids to make flash cards with the headings, different bullet points.

However, despite such laudable intentions it was also evident that the challenges involved in providing individual feedback within a whole class setting were considerable, for, as one teacher commented (School 5) 'To suggest to each individual, this is where I would expect you to be, would be really difficult and complex.' Many teachers reported that a mix of carrot and stick type approaches were involved; the shock approach of asking students to attempt final SQA examination questions throughout the course, and, by contrast positively reinforcing students when they sought out library resources and such like.

As Entwistle and Smith (2002) have noted, the merging of teacher target and students' personal understanding can be aided by linking assessment grade related criteria with individual student feedback. Specific assessment grade related criteria exist for units and courses in HSPE. However,

for teachers to set student expectations which were expressly based on these definitions of standards (SQA, 1999c) was problematic given teachers' previously reported requests to receive as much feedback as possible about students' assessment (Cairns, 1997; Douglas, 1998; Freel, 1999).

Given teachers' concerns over the adequacy of time for teaching, learning and assessment in HSPE, it was unsurprising to note that teachers were pleased with the reduction in the level of AP unit assessment which took place during the first session of HSPE in 1999-2000 (Chapter 3.7). Most teachers began their unit assessments about a third of the way through the award due to anxiety about how students were performing, and to help teachers themselves come to terms with the new assessment protocols for unit assessments. However, the process of completing unit assessments and of then allowing further opportunities for students to re-sit the unit assessment as necessary only appears to have added to teachers' time management concerns. With some considerable flexibility and imagination one teacher (School 9) had attempted to reduce the volume of unit assessment time by ensuring that the prelims (a designated examination only period in the school year) was used for the completion of unit assessments rather than as a time of examination preparation for the course assessment. However, such interventions were rare. Most teachers anticipated that with greater experience the amount of time spent on assessment would be reduced in future years relative to teaching and learning time. Yet, given the continuing low levels of unit moderation and formal feedback about end of award results from the SQA combined with teachers' general lack of confidence in basing diagnostic feedback and future student learning targets on the precise wording of grade related criteria, achieving these gains may be harder to bring about than teachers anticipate.

Due to teachers' ongoing time management concerns it was also of interest to ascertain how the additional time available for all higher level awards within Higher Still was used. Many teachers simply continued teaching such were the perceived demands of covering the key concepts.

However, there was, as with the strategies for completing unit assessments, evidence of some schools attempting to maximise the benefits of additional time. In one school (School 10) the teacher reported on how changing the nature of the assessment tasks was designed to help students see the transferability and applicability of their knowledge of key concepts. For example, one exercise asked students to link data from various activities and apply it to the planning of a conditioning training programme in a different activity. Hence, by students deploying their underpinning content knowledge about training principles to another activity it offered teachers and students alike a further opportunity to check understandings.

With regard to understanding students better and setting more appropriate learning and assessment targets, the complex normative arithmetic used by the SQA to finalise pass marks remained a source of concern for teachers (Chapter 3.6.3). These difficulties resulted in contrasting approaches. At one school (School 7) the assessment scores for all students across all units were subjected to a complex sliding scale reduction procedure which was aimed at determining more accurately students' final marks. The intention was to anticipate the normative decisions of the HSPE examination team, and thus increase the school's concordance in accurately forecasting students' final awards. In many other schools less complex procedures were enacted. In School 4 it was reported that the challenges of accurately predicting students' progress was still 'a bit hit and hope'.

Overall, evidence suggests that complexities remain for many teachers in linking targets which are informed by assessment criteria with the personal learning and assessment profile of individual students within a class setting. For this reason questions remain about how this training need will be met and whether or not wider nationally-based teaching, learning and assessment interventions can usefully benefit the specific requirements of teachers of HSPE, where there is a recognition by the SQA that learning in classrooms is unlikely to yield the types of active engagement required from students.

Summary

A review of the curriculum decision-making associated with deploying the teaching approaches described in the award arrangements (SQA, 1999c) highlights the considerable problems posed for teachers in teaching HSPE. This resulted in a narrowing of the domain of learning, as only a few teachers could develop the degree of trust and flexible control necessary within authentic performance-led teaching and learning environments. Learning in classrooms adversely affected student motivation and raised further general questions about how teachers could feasibly integrate teaching and learning in ways which coherently led to teacher/student agreement about future learning goals and expectations. Teachers considered that improvements in addressing these concerns were compounded by the lack of feedback from the SQA on student examination performance.

5.2.4 Pedagogical Content Knowledge

Curriculum literacy and pedagogical content knowledge

Abraham and Collins (1998) note from a sports coaching perspective, that expert coaches are better at connecting existing knowledge with new knowledge. However, in this research only a few teachers could elaborate about how precisely the new key concepts arrangements (SQA, 1999c) connected with students' performance experiences in different activities. Most teachers assumed instead that the deployment of reproductive teaching practices was adequate in explaining to students the overall structure and design of the award. By contrast the lead teacher for School 9 explained how he attempted to ensure students understood the structural links between performance experiences and related key concepts. The lead teacher explained that:

We've got a system now where we've managed to go through a lot of the exemplar material and actually cut to the chase as it were. It sounds very simple, but we've headed them up

‘key concept’, which key concept are you looking at here, and therefore we’ve got a little light bulb icon, things to do and then they can actually do a small piece of homework based on that. There are things to do within it and the kids can see what we’re trying to achieve within that key concept.

Similar procedures were in evidence in School 10, where there was awareness that students needed to be repeatedly reminded of the fundamental structural arrangements of HSPE, and of how these arrangements articulated with the specific course design features (activities linked to areas of AP) of their course award.

Perhaps due to students’ unease over precise learning aims, there was, despite the generally favourable reporting of teacher and student relationships, occasional light criticism of teachers when it came to perceived discrepancies and confusion in the quality of advice provided. This occurred most with the IP, for example, students in Schools 5 and 6 were critical of the vagueness of teacher explanations about how to progress their investigations. Given that most schools began the IP relatively early in the course, many teachers were attempting to engage in genuinely investigative discussions with students, even though the type of facilitation deployed by teachers was perceived by some students as rather vague. Student commentary was that their preferred learning style was based on convergence towards a definite answer rather than a plethora of ‘could be’ possibilities, which were perceived of as being too divergent to enable key progress points to be understood.

However, there were a few examples of students and teachers relating to each other in more productive, coherent ways. One student in School 9 commented that:

If he (the teacher) didn't have an answer the first thing he'd do that night was go and find you one and come back the next day and say to you I don't know if this is right or not but this is what I've found and if you want to use it you can and if you don't okay.

This method of shared and open-ended enquiry based on the teacher and student working relationships was certainly appreciated by the same student who commented that:

I think his dedication was something else. He put in a tremendous amount of work throughout the whole year. Even when we got the results (summer vacation) he phoned every one of us to find out how we got on It just made you think how committed he was for you.

This example is impressive given the newness of the subject and the extended professional demands required of teachers' pedagogical content knowledge. However, developing these abilities was far from straightforward, with the lead teacher putting it down to years of teaching experience, when stating that 'Part of it's down to age. I've just turned 40 and as you get older you realise your limitations a bit more.'

Another teacher (School 10) noted that developing a personal learning relationship with students through problem solving teaching approaches was a complicated, time-consuming but ultimately rewarding process. The teacher outlined that developing the necessary teaching expertise was reliant on being confident enough about their own pedagogical practice as the basis for developing students' interpretive abilities. By way of example, the teacher commented that:

There was one gymnast in the class and I said what do you think you're going to look at and she said well I thought I might look at my backflip. I said you mean your backflip as part of your routine. She was looking around as if to say 'why is he speaking to me'. She said, Well, yes'. I said, How often are you going to do this backflip in your routine, do you

know? Do you know how you get into the backflip and out of it in different ways? I said if you laid out on a diagram of each skill as you went and then drew out of a map of the movements around the mat and your piece of music that you're dancing to and you decided on criteria for what was done well or what wasn't done well, and then you video yourself. All these things I'm giving support and trying to nudge her thinking along. So yes, you have to look at the audience that you address. I don't really know the basis of a perfect backflip, but I'll learn it when I watch the video. But I can talk about a backflip for her Investigation and talk with her about how it is physically demanding, how you might want to put it at the beginning of your sequence as it would be easier then than at the end. It takes a bit of time though.

In both examples, teachers were improving student learning through making learning accessible and through breaking down complex learning challenges into more manageable sized chunks at a time when they were also trying to improve and extend their own pedagogical content knowledge. Crucially, students appeared to be involved at the level of note-making, rather than of note-taking (Ayers et. al., 2004). This appears to be in contrast with other schools where there was greater evidence of teacher dependency on using centrally produced support materials combined with an expectation by students that teachers would provide answers to their own particular learning challenges.

Additionally, in both Schools 9 and 10 the lead teachers commented that practical experiential learning could be enhanced through trying to connect performance in school with sport in society, as this assisted students in setting realistic and longer term performance improvement goals. Consequently, both teachers took time to organise sporting competitions during out of school hours to promote practical learning. In pursuing similar objectives, one small unitary authority (containing School 4) arranged competitions between students from all seven secondary schools at the same time and in the same venue. This enabled a greater concept of special 'whole' performance to

develop, and was widely praised (Student and Teacher interviews, School 4), as it provided students with the opportunity to collect data from realistic settings, which might otherwise not have been possible in some schools.

However, more generally teacher commentary was that it was difficult, at times, to develop connections between performance-led work and setting learning goals for students. The lead teacher in School 10 commented that:

I think we're pretty poor in this country about goal setting in general. About saying to a kid 'Well, what's your aims for this year?' 'Oh well I'm not very sure.' Whereas, the girls from America and Switzerland [who were part of an international one-year student exchange programme], knew straightaway what they would do with the year. The boys are a bit slow at coming forward at that sort of thing, but now that they're coming into sixth year we find that they are a bit more adult in their approach, and able to accept that responsibility.

Overall, in trying to retain student motivation as well as cover the necessary width and depth of content knowledge (HSDU, 1998a) the most common response by teachers was to simplify the use of centrally produced resource materials (HSDU, 1998c). For example, in School 4 one teacher stated that 'I think some of the depth in them has been too great. I've used the basketball ideas, but I haven't really used the notes that accompany them. I've used the headings.' However, with this approach there is a risk that the simplified use of materials might only address short-term student motivational requirements rather than longer-term learning and assessment needs. Carr (2003) has noted there is a fine line between equipping students with the perquisites to answer questions and overloading students with information. However, the opposite is also possible with attempts to equip students with necessary perquisites failing to provide students with the required level and detail of information and comprehension skills necessary. Due to the complexities involved in this area, the forms of continuous professional development interventions that might benefit teachers' in

making informed and robust evaluations of course effectiveness, which can then highlight how the challenges in student learning are made more feasible are thoroughly reviewed in the concluding chapter (9.4.3).

Practice / theory learning environments and pedagogical content knowledge

All teachers reported using class based sessions at some point in the year, for example, in writing up IP tasks and for completing AP unit assessments. A few teachers used class based learning for consolidation and revision purposes. In School 8, the last of the five weekly periods assigned to HSPE was predominantly used for recapping on new content knowledge introduced during the week and the final week in every month was for ‘theory’, and for completing the IP. In some schools, teachers considered there was a pragmatic need for class based sessions in order to check that learning was taking place and to provide a stable environment for ensuring that students could pay attention. One teacher (School 4) commented that:

I make a lot of use of the classroom, definitely. I think that the classroom situation is where most of the progress is made in terms of the theory. I know most of the responses that I'm looking for, that I can pin all the children down at the same time and make sure that they are all listening. Sometimes out in the field it can be a bit tricky. It can go right over their heads because they are wondering where the next overhead kick is coming from, or whatever.

Thus, in School 4 and other schools, teachers’ views reflected previously identified problems (5.3.4), where many teachers, in attempting to fulfil a practical experiential rationale, became reliant on classroom teaching environments. Furthermore, class based sessions were mostly dispiriting for all concerned. The lead teacher in School 8 commented that:

We try to make the course as good, as interesting, as enjoyable, as true to the nature of PE as possible. However all the things about providing a wonderful course count for nothing if they all do not pass at the end. So, it's about passing, and there's a recipe that you have to

follow to get through these things. So, we're following the pattern, we'd do the course differently if we didn't have to just worry about exams.

Therefore, just as Tinning (2002) has noted within the senior school curricula in Victoria, Australia that changes in curriculum can be adversely affected by assessment arrangements, it appears that this is the case with HSPE as well. However, only one school (School 9) challenged this situation with the lead teacher commenting that 'I expect this year schools are being chased into the classroom and that is wrong, that is so wrong it is untrue. If you go down that road we're as well jacking it in'. Thus, even though Ayers et. al., (2004) found that expert teachers across a range of subjects were not unduly constrained by assessment practices, the teaching challenges associated with HSPE combined with the ongoing imbalance in the attainment profile of students appears to have resulted in this occurring with HSPE. This situation appears as well to have led to the continuance (if not increase) of rote prepared answers being used in national examinations.

Specifically, the Principal Assessor's Report (SQA, 2002b, p. 5) notes that:

Markers reported that there appeared to be an increase in the instances where students were attempting to apply a pre-planned answer in their response to Analysis of Performance questions. This strategy has always been used and its success is dependent on how well you are able to fit the prepared answer to one of the questions set. In many instances this year candidates did not relate their response to the key words of the question and instead wrote all they knew about the particular analysis area. Some centres now seem to give students prepared answers to learn so it is not unusual to find the same answer appearing again and again, sometimes word perfect, in the centre's pack of papers.

Overall, given the difference in methodological approaches to teaching, learning and assessment between those espoused in the rationale and the actual on the ground strategies some teachers are deploying it is clear that what is required is some form of teaching or coaching intervention which

might sensitively consider how teachers could sustain practical experiential learning for longer and in doing so become more confident of its benefits. For this reason in the concluding chapter (9.6.3) one model of coaching, which is based on recognising that teachers' learning to learn is as important as the acquisition of new content knowledge and skills, is explained with a view to considering its application for teachers of HSPE.

Content knowledge, formative assessment and pedagogical content knowledge

As highlighted in 5.3.3 and elsewhere (Brewer, 2003) there were many teachers who were forthcoming about the challenges posed for teaching HSPE, but in only a few teachers were able to reflect, in detail, on how a positive transfer from performance-led learning to students achieving high levels of attainment could occur. However, one teacher, in particular, was able to elaborate on how individual students were expected to work and learn as part of a larger group within the overall class. The teacher (School 9) commented that:

...they don't just get everything from me. They take bits and pieces they've collected during the week and they compile best practice ...I say you four students get together and you four get together, you've got ten minutes to produce sum up what they've done in that particular thing, how did you collect information on that. Write out the system that you used, put some headings and notes and whatever you've collected and give me back how you've managed this and between the various groups we build up and get a big cross picture, put all our ideas on the board. They're willing to listen to you for ten minutes, the rest of the time I think you've got to engage them in producing the ideas and the answers rather than you giving the answers.

It was noted that these pedagogical practices were positively endorsed by the Principal Assessor who when commenting on a sample of scripts from School 9 from session 1999-2000 reported that:

All students answered in the context of basketball and marks were generally very high – 3 between 18 and 20. All had full and clear detail of 2.1.2 zone and / or man to man marking.

This had been carefully prepared by each student in the context of the role they played so the appearance of Q10 must have been great news for them. Particularly impressive was knowledge of team principles and the way students could describe them with appropriate performance examples. In answering Qs 11 and 12, some of the most able students in the group were able to demonstrate a real depth of knowledge about the strengths, weaknesses and adaptations within their chosen strategies. All were relative to specific features of their own performance.

Summary

Interview evidence suggests that for many teachers reflecting in detail upon how the transfer from practical experiential learning to high levels of analytical understanding could realistically occur without either a simplification in the level of demand presented to students or by changing to a practice and theory mode of delivery were difficult matters to resolve. One particular consequence of this transfer of learning difficulty was that it tended to limit the extent to which teachers could design strategies which met individual students' needs as well as overall class needs.

5.3 Summary of first phase of Research (2000-2001).

After reviewing evidence from the ten schools, gathered through a process of four teacher and student interviews in each of the ten schools, the following summary identifies the commonalities between certain 'types' of schools. These schools are described and contrasted with other school types. Overall, evidence supports a fourfold classification of schools. Firstly, there were two schools (number 1 and 2 in Table 7) where staffing circumstances were of such an influence (high levels of absence, poor health of staff in post), that attempting to draw meanings from interviews would have proved unreliable. Accordingly, these schools are eliminated from further consideration.

Secondly, there were four schools (number 3 to 6 in Table 7), which were characterised by broadly following the policy rationale but with modest assessment success (high performance, low AP), and where immediate assessment pressures were determining the methodology and the quality of student learning experiences. In these schools, teachers were being rather overtaken by the multiple challenges of attempting to embrace constructive teaching methodologies, develop their knowledge base to cover adequately the width and depth of course content, make effective curriculum decisions about how to complete the assessment procedures, while also dealing with students' variable level of motivation. Thus, while teachers' beliefs were favourably disposed towards HSPE, for various pedagogical and operational reasons, teachers could not deploy policy as they would have wished or quite as policy was expected to be deployed. In future reporting these schools are labelled as 'trying' schools.

Thirdly, there were two high achieving schools which were 'successful' in a reductive sense of the term (number 7 and 8 in Table 7). These two schools had decided a priori that the extent of their assessment concerns merited the development of prescriptive answers that could be rote-learned by students. Consequently, many students were involved in 'elaborate charades designed to demonstrate progress at a systems level rather than in levels of learning' (Haywood and Hedge, 2005, p. 66). Overall, therefore, 'the absence of the working with and valuing [of] difference' (Lingard, 2007, p. 257) requires that a cautionary note is recorded when considering these schools as high achieving.

Yet, at these schools, courses began with an emphasis on the analytical processes involved in collecting data (5.3.4) and the lead teacher (School 8) endorsed the benefits of whole school staff development opportunities designed to illustrate how effective and authentic student learning could occur. Teachers from these schools recognised the conflict which existed between their views of teaching when the course began relative to the assessment approaches which were in operation by

the end of the course. Nevertheless, these teachers considered that it was best to adopt set recipes to try to secure high pass rates.

However, there was little evidence that rehearsing students in rote fashion actually benefited students as intended. From further information requested, the Principal Assessor for HSPE noted for one of these schools that:

All the students attempted to describe a strategy from 4v4 volleyball. Some fully understood the detail of rotation etc, but others less knowledgeable got confused in attempting this description. Clearly this was a prepared answer which all had been told to attempt. The confusion which some showed continued as they tried to discuss problems, strengths and weaknesses of this strategy.

Additionally, the Principal Assessor commented that more able students often underachieve through being constrained by rote teaching and assessment approaches (SQA, 2001b; SQA, 2002b). In brief, immediate assessment requirements appeared to have dominated the curriculum decisions taken in these schools to a considerable extent and in future reporting these schools are labelled as 'rote' schools.

Fourthly, there were two high achieving schools (number 9 and 10 in Table 7) where teaching was characterised by a high level of expertise for performance-led teaching environments, where feedback was effectively built into teaching and learning and where the students were highly motivated and engaged with learning tasks. Crucially, students in these two schools completed the assessment answers (three written answers in a two and a half hour examination), in the divergent open manner expected. Hence, there were significant differences in how teachers at these schools had professionally defined their teaching and assessment practice for HSPE from the teachers in the other high achieving 'rote' schools. This had a consequent benefit for students in their attempts to

develop genuinely performance-led assessment answers. In future reporting these schools are labelled as ‘succeeding’ schools.

In the ‘succeeding’ schools, teachers were able to ask questions which stimulated discussion rather than ask questions which addressed pre-arranged set points. Accordingly, students were guided through tasks that allowed them to make relevant connections between performance and the influences that shaped its development (Osborne, 1997). These tasks were less apparent in the ‘trying’ and ‘rote’ schools, where more direct teaching styles were more commonly reported. Thus, it appears that in the ‘trying’ and ‘rote’ schools, potentially productive learning environments of long-term usefulness were often discarded because students initially seemed to have difficulty in seeing the overall picture of what was required. By contrast, teachers at the ‘succeeding’ schools commented that retaining a practical experiential approach was helped by their recent self-initiated involvement in related professional development opportunities as these had improved their knowledge of key concepts.

The benefits of retaining a practical experiential approach were reflected in student commentary when preparing for the end of year AP examination, where one student outlined that ‘you knew how to explain it but not how to write it.’ Consequently, teachers at the ‘succeeding’ schools typically refined students’ writing skills and helped students to comprehend questions better in the closing months of the course, in particular. However, the meaningfulness of students’ performance-led experiences enabled them to explain their understanding once the necessary support skills (essay writing and question comprehension) had been considered.

Interestingly, both teachers at the ‘succeeding’ schools were teaching in semi-deprived socio-economic areas (Table 7). Comparison with the national average percentage figure for students achieving three higher level awards in S5 (Table 7) indicates that students in the ‘succeeding’

schools were out performing two other groups of students, firstly, other higher level PE students in schools in much more favourable socio-economic areas, and, secondly, students completing other higher level awards within other departments in their own school. Both lead teachers, however, commented about the particularly good cohort of students who completed HSPE during session 2000-2001. This helped make teaching, learning and assessment as productive as possible and indicates that achieving authentic success year-on- year might not necessarily be easily repeatable even at a 'successful' school.

There were differences, however, between the two 'successful' teachers with the lead teacher at School 9 more extrovert and able to inspire, engage and motivate students to make the best of their school opportunities. Teaching was described as an intuitive activity. The use of IT in teaching and learning was limited, a point acknowledged by the lead teacher when he stated that:

I think there's a lot made of this, digital cameras, computer, CD Rom all that sort of stuff but at the end of the day I think it's down to relationships, drive and getting the most out of the individuals. You've got all the technology you want, but if you haven't got the intrinsic motivation to get the kids through the thing and to make it interesting for them what use is it really? I don't use a camera an awful lot I've got to be honest with you.

By contrast the lead teacher in School 10 was quieter, used IT more extensively and appeared particularly able at diagnosing levels of learning and understanding with students and adjusting teaching accordingly.

In summary, the key finding which emerged from the first phase of data collection is the contrasting number of ways in which teachers have responded to the demands of planning, teaching and assessing HSPE. Evidence provided in the chapter supports a threefold classification of teacher 'types'. There were 'trying' teachers, who while attempting to put into practice experiential learning

approaches became overtaken by the scale of the pedagogical and assessment challenges involved. There were also 'rote' teachers, where the richness of the students learning and assessment experience became increasingly constrained as teachers became convinced that prescription was the best method for achieving higher marks. Lastly, there were 'successful' teachers, where the vitality of practical experiential learning approaches was reflected in the authenticity of students' individually different assessment answers.

Following the description and comparisons of schools provided, the overall impression gained is that HSPE is a conceptually demanding and detailed award whose aims are possible to realise to a reasonable extent when there is a combination of motivated students and particularly skilful teachers. However, whether this is a framework for curriculum sustainability remains to be seen. Interpretation, to date, indicates that policy intentions and declarations often fail to resonate through to practice in schools. Furthermore, findings from this first phase of research have also highlighted the variety of factors which interact to influence how curriculum aims are transferred into pedagogical practice as pragmatic concerns can dominate to such an extent that the achievement of higher order educational objectives is lost. While not a particularly surprising finding, this would suggest that the design, evaluation and refinement of awards like HSPE need to consider and cater for these genuine pressures in an overt fashion rather than failing to acknowledge their existence. Accordingly, in Chapter 9, a number of interventions which might be effective in addressing the various shortcomings reported are presented.

To date, however, the explicit examination of an integrated curriculum programme based on adherence to following the necessary SQA arrangements (SQA, 1999c) has yielded interesting insights for the development of this particular style of award, most obviously through the varied range of decision making found in different school environments. However, as identified earlier (Chapter 4.3) a more complete understanding of the situation is likely to be revealed through

considering data about the quality of students' learning and assessment experiences as well.

Accordingly, the second phase of research focused on students' ongoing learning and assessment experiences as well as on analysis of attainment outcomes.

Chapter Six: RESEARCH PHASE TWO (2002-2003): THE EFFECTS OF AN INTEGRATED CURRICULUM MODEL ON STUDENT LEARNING AND ATTAINMENT

6.1 Introduction

Through the use of empirical data and published information pertaining to HSPE, this chapter discusses the effects of teachers’ decision-making on students’ learning experiences and on the development of students’ analytical skills. In addition, comparisons between the sampled schools’ results and national assessment results are examined.

6.2 Results

Table 13 outlines the assessment profile of each school for the four school-based AP tests completed during session 2002-2003 and Table 14 indicates the mean marks achieved in each school in national examinations for each area of course assessment for the same period. Table 15 details the level of accuracy of teachers’ estimates of student performance during session 2002-2003.

Table 13: The profile of each school for each of the four school based Analysis of Performance assessments during Session 2002-2003 (all figures are in percentages).

Characteristic assessment profile of each school	No. of students	1	2	3	4	Mean for each school
School 5: ‘Trying’ High Performance / Low AP	18	33.0%	26.6%	17.6%	35.0%	29.0%
School 6: ‘Trying’ High Performance / Low AP	17	42.6%	35.0%	33.0%	44.6%	39.0%
School 7: ‘Rote’ High Performance / High rote AP	15	53.0%	38.3%	39.6%	53.6%	46.3%
School 8: ‘Rote’ High Performance / High rote AP	16	55.3%	32.6%	32.6%	32.0%	38.3%
School 9: ‘Succeeding ’ High Perf / High authentic AP	14	53.6%	34.3%	31.0%	49.3%	42.0%
School 10: ‘Succeeding’ High Perf /High authentic AP	17	36.0%	25.0%	27.0%	29.3%	29.3%
<i>Mean per AP test</i>		<i>46.0%</i>	<i>32.0%</i>	<i>30.3%</i>	<i>40.6%</i>	

Table 14: The mean marks achieved in each school relative to the national means for all areas of national assessments from 2000 through to 2003, (all figures are in percentages).

Characteristic assessment profile of each school	Year	No. of Students	Performance / National mean (Course weighting 50%)	Analysis of Performance / National mean (Course weighting 33.3%)	Investigation of Performance / National mean (Course weighting 16.6%)	Perf <-> AP/IP
School 5: 'Trying' High Perform /Low AP	2000	19	85.2 (82.7)	28.3 (40.0)	42.3 (42.3)	85.2<->32.9
	2001	14	73.8 (84.4)	24.0 (41.1)	45.0 (50.3)	73.8<->31.0
	2002	16	74.0 (84.2)	32.8 (38.8)	49.0 (48.3)	74.0<->38.2
	2003	18	78.2 (84.0)	45.1 (40.8)	43.3 (46.0)	78.2<->44.5
School 6: 'Trying' High Perform /Low AP	2000	17	85.3 (82.7)	41.5 (40.0)	38.0 (42.3)	85.3<->40.3
	2001	24	84.7 (84.4)	43.1 (41.1)	46.3 (50.3)	84.7<->44.1
	2002	12	85.7 (84.2)	47.3 (38.8)	52.6 (48.3)	85.7<->49.1
	2003	17	85.1 (84.0)	41.3 (40.8)	53.6 (46.0)	85.1<->45.4
School 7: 'Rote' High Perform/High AP	2000	15	86.0 (82.7)	51.3 (40.0)	65.3 (42.3)	86.0<->55.9
	2001	10	81.3 (84.4)	51.3 (41.1)	63.3 (50.3)	81.3<->55.3
	2002	14	79.7 (84.2)	33.8 (38.8)	56.3 (48.3)	79.7<->41.3
	2003	15	82.4 (84.0)	49.3 (40.8)	62.3 (46.0)	82.4<->53.6
School 8: 'Rote' High Perform/High AP	2000	11	93.7 (82.7)	54.3 (40.0)	48.3 (42.3)	93.7<->52.3
	2001	17	93.8 (84.4)	51.1 (41.1)	48.3 (50.3)	93.8<->50.1
	2002	16	94.0 (84.2)	33.8 (38.8)	59.3 (48.3)	94.0<->42.3
	2003	16	95.3 (84.0)	40.6 (40.8)	58.0 (46.0)	95.3<->46.4
School 9: 'Succeeding' High Perform/High AP	2000	16	76.2 (82.7)	59.8 (40.0)	56.3 (42.3)	76.2<->58.6
	2001	17	75.4 (84.4)	34.5 (41.1)	63.0 (50.3)	75.4<->44.0
	2002	16	81.3 (84.2)	40.6 (38.8)	49.3 (48.3)	81.3<->43.5
	2003	14	78.7 (84.0)	56.6 (40.8)	45.6 (46.0)	78.7<->52.9
School 10: 'Succeeding' High Perform/High AP	2000	11	88.6 (82.7)	52.5 (40.0)	38.3 (42.3)	88.6<->47.7
	2001	19	87.3 (84.4)	47.3 (41.1)	45.0 (50.3)	87.3<->46.5
	2002	20	87.3 (84.2)	39.8 (38.8)	46.0 (48.3)	87.3<->41.8
	2003	17	82.2 (84.0)	42.3 (40.8)	60.6 (46.0)	82.2<->48.4

Table 15: The accuracy of teachers’ estimates of student performance during Session 2002-2003 (figures in brackets are percentages).

Characteristic assessment profile of each school	Year	No. of Students	Correct Teacher estimate	Overestimate by Teacher (Students did poorer than expected)	Underestimate by Teacher (Students did better than expected)
School 5: ‘Trying’ High Perform / Low AP	2003	18	5 (28%)	9 (50%)	4 (22%)
School 6: ‘Trying’ High Perform / Low AP	2003	17	7 (41%)	3 (18%)	7 (41%)
School 7: ‘Rote’ High Perform / High AP	2003	15	8 (53%)	0 (0%)	7 (47%)
School 8: ‘Rote’ High Perform / High AP	2003	16	8 (50%)	0 (0%)	8 (50%)
School 9: ‘Succeeding’ High Perform / High AP	2003	14	7 (50%)	2 (14%)	5 (36%)
School 10: ‘Succeeding’ High Perform / High AP	2003	17	12 (71%)	1 (6%)	4 (23%)

6.2.1 Classification and Performance

Trying Schools 5/6 – (High Performance and low AP attainment)

Consistent with the national data, differences between the two learning domains were evident in school 5. In 2003, students’ mean for Performance was 78.2% of the available marks as opposed to 44.5% for AP and IP (Table 11). In 2003, the external AP marks were above the national mean for the first time (Table 14), but such improvement was not reflected in the student evidence collected during the session, where there were low mean scores recorded throughout the year. Only in the fourth and final assessment was there any modest evidence of improvement (Table 13).

School 6 was the only school sampled where there was modest improvement in students’ analytical abilities in both external and school based AP assessment (Tables 13 and 14). The lead teacher had experimented with offering different practical activities to appeal to more students, and showed an ongoing commitment to the IP, even though this area of the course was criticised by other lead teachers as repetitive and problematic to tutor. In addition, there was evidence (Table 15) that the

lead teacher had a reasonable ability to estimate student performance accurately and more students did better than expected (41%) as opposed to poorer than expected (18%). These findings were not evident in the other 'trying' school where half of the students did not gain the grade expected (Table 15).

Interview commentary in school 5, and to a lesser extent in school 6, indicated that many students had only a vague understanding of the learning and assessment challenges associated with HSPE. In addition, when asked specifically about the worth and value students attached to HSPE, few students had considered how the specific aims of the award might dovetail with tertiary education or career plans. Furthermore, the spirit of the rationale appeared to have only a partial audience. All students were motivated towards Performance work but a sizeable minority (over a third of respondents) considered written work 'a nuisance' rather than a conceptual challenge, and were thus rather resigned to the inclusion of written AP tasks. Students commented that they enjoyed working in groups and the rapport which had developed with the lead teacher for HSPE. However, when prompted on their learning and assessment expectations, students were far more uncertain. Scrutiny of field notes indicates that this went beyond surface interview coyness to genuine lack of forethought about the level of commitment and expectation that might be required in HSPE.

Rote Schools 7 and 8 (High Performance and AP attainment)

Results indicate that school 7 has consistently achieved above average AP and IP mean scores apart from one blip - the 2002 AP examination (Table 14). The marks achieved for IP were the highest of any of the sampled schools in three out of the four years and were always above the national mean (Table 14). School 7 came closest to achieving stable examination marks in both national and school based AP assessment, even though the marks achieved were still modest in comparison with expected national standards (Tables 13 and 14).

The profile of results from school 8 indicates consistently high Performance marks, slowly deteriorating AP marks and slowly improving IP marks. The school experienced the same 'blip' with a low 2002 AP examination average (Table 14) and the school based AP results reflect the deterioration evident in the end of course examination results (Table 13). After achieving the highest mean of any school at the first assessment stage, further school assessment results indicate lack of progression in contrast to all other schools. The national results for 2003 indicate a considerable gulf between the two domains 95.3 <-> 46.4 (Table 14). With such high Performance marks the true extent of the low AP learning levels remains somewhat obscured to the lead teacher.

The 'blip' experienced by both schools in the 2002 AP examination is illuminating as previous Principal Assessor reporting of rote procedures (SQA, 2001b) resulted in the 2002 AP question paper trying to address this issue by asking questions in a more distinct process / content knowledge manner (SQA, 2002b). As might have been anticipated, this appears to have had the greatest impact on schools 7 and 8 (Table 14). However, by 2003 the schools appear to have worked out viable responses to the revised question format. In short, it appears in these schools at least particularly difficult to rectify rote assessment procedures through written assessment instruments alone.

For the majority of students in school 7 there was an enduring interest in performance work and a grudging acceptance of the written requirements of the course. Typical of responses was one student who commented that:

The writing is a bit dull and everyone prefers the practical, still if you were to just talk about it then it would be difficult to remember all the detail to put in your answers, whereas if you have your notes and your advice from the teacher it is a bit better as you have more ideas about what to write for homework.

As a group, students in School 8 frequently cited alternative reasons to those advanced in the rationale as the basis for choosing HSPE (student interview 1, various respondents). Many students commented on the social participation benefits of HSPE and of how it was a 'break in the day' and 'something a bit different to do in S6'. School 8 was distinct in three particular ways from other schools in the research, firstly, socio-economically it was in a prosperous middle class area, secondly, many of the students were in their final year of schooling and had already achieved tertiary education entrance requirements, and thirdly many of the students had no previous experience of taking any examination PE courses. The combination of the differences resulted in many students outlining how they choose HSPE for a range of general educational reasons rather than intending to use HSPE as part of their entry requirements for tertiary education or as a key contributor to their career development plans.

Despite the similarities in the way both schools completed assessment tasks, different teaching and learning approaches were experienced by students. School 7, is in a lower-middle class city area, and teaching and learning was characterised by a strictly controlled environment where preparation for assessment was an ongoing feature of delivery and where students generally accepted these approaches as a pragmatic necessity required for passing the overall award. During informal discussions with the lead teacher on data collection visits the degree of assistance provided for AP tasks and the frequent recourse to redrafting and editing within the IP was commented on as the 'best approach for getting some marks in the bag' and the 'best way for my kids'.

By contrast, in school 8, despite the low mid term marks achieved by students in the school based assessments, a much more laissez-faire lesson climate was reported (student interviews 2 and 3). The lead teacher rather assumed that as assessment results had worked out so favourably in previous years, and that as most students were naturally quite able, that all would be alright by the

end of the course. In light of the very high pass rate achieved by students (achieved largely through high Performance marks) it is easy to see why matters would be viewed in this way (Table 14).

Overall, it remains noteworthy that despite the high levels of precisely defined assessment procedures it was the two 'rote' schools which emphasised the importance of data collection at the outset of HSPE. These findings might account for the relatively high marks both schools subsequently achieved for the IP before the commitment to sustain genuinely performance-led teaching and learning environments was overtaken by assessment concerns.

However, apart from the 2002 blip in results (which might well be attributable to the rewording of questions for the AP examination in this year), by 2003 AP and final grade results had improved in both schools with half of students receiving the expected grade and the remainder of students achieving a higher grade than expected (Table 15). As both lead teachers taught in schools where for various reasons there were few other teachers who were available and willing to teach HSPE, such a position appears likely to continue for some years to come. On this evidence it cannot be anticipated that these schools would be inclined to change learning and assessment approaches to any great extent in future years.

Succeeding Schools 9 and 10 (High Performance and AP attainment)

A noticeable feature of the 'succeeding' schools is the difficulty they found in sustaining examination performance from 2000 onwards. For school 9, there was a return to achieving high AP marks in 2003, however, IP mean marks remained poor year-on-year (Table 14). The school based assessment results indicate that students were above average at each of the four assessment stages throughout the year (Table 13), and student interview commentary indicated that the lead teacher still thrived on teaching through authentic practical workshops with a problem solving orientation. However, this enthusiasm was not shared for the IP where results were modest, and

where the lead teacher had a continuing dislike for the drafting and re-drafting of investigative reports. There was also evidence that many students reflected their teacher's view on this matter (student interview 3). The lead teacher's estimate of students' performance showed a relatively high degree of accuracy with half of students achieving the grade expected and over a third of students (36%) receiving higher grades than expected (Table 15).

Results from school 10 indicate a slow decline in the quality of students' analytical work in comparison with national standards, but some improvements (from a low start position) in the IP (Table 14). The school AP test results indicate that students were below the mean for all schools throughout all four assessments (Table 13). Nevertheless, when completing the national AP examination they achieved above the national mean. Students commented that relationships with the lead teacher for HSPE were particularly good and were characterised by a high level of calm, reassuring support (student interviews 2 and 4). This appears to have been helpful in securing late improvement and in assisting students towards producing individually different authentic answers. At a school level this pattern of progress highlights the ability of the lead teacher to recognise that sensitive pedagogical practices can lead to late attainment improvements. Findings indicate that nearly three quarters of students (71%) received the grade expected by the lead teacher, the highest of any of the sampled schools (Table 15). Despite these laudable features of teaching (sensitive pedagogical practices and accurate estimates of students' capabilities) findings also indicate the worrying extent to which it is possible to achieve respectable national standards of attainment though students' level of underpinning content knowledge remains relatively modest.

Summary

The categorisation of schools outlined in initial reporting has only changed in subtle and small ways. There is, as yet, no convincing evidence of teachers being able to achieve high levels of process skills and content knowledge understanding, which can then transfer to students producing

individually different answers which reflect their own learning experiences. While some schools have made occasional improvements, year-on-year success has proved unattainable, even at the schools previously classified as 'succeeding'. To date, school 7, which has achieved the closest to ongoing assessment 'success', has the most dependency based teaching and assessment set up of any school.

6.3 Interpretation and Discussion

The following discussion evaluates student group interview findings about the quality of their learning experiences and the development of students' analytical abilities (process skills and content knowledge understanding). In addition, comparisons of the sampled school results with national assessment results are completed.

6.3.1 Students' learning experiences

For many students the perceived easiness of SGPE made the learning challenges in HSPE appear much more demanding by comparison. In school 8, where atypically only six out of sixteen students (37.5%) had completed SGPE, this particular group of students (n=16) achieved the highest marks of any school in the first school based AP assessment. This evidence indicates that SGPE may be of limited relevance as a learning vehicle for progression to higher level study. Therefore, it is of concern that even at the lower level of demand required at SGPE level that results nationally indicate that students typically perform poorer for KU and EV than they do for Performance (SQA, 2001a; SQA, 2002a; SQA, 2003a); a situation which mirrors the attainment imbalances which exist for HSPE.

Despite these attainment challenges there was evidence that participation in practical workshops with a problem solving orientation was appealing to students. In all group interviews students (n=97) indicated that they would prefer practical work with follow up associated homework study

to class based ‘theory’ sessions with no follow-up homework at all. However, overall it appears from student commentary that the potential for a meaningful personalised engagement in critical and imaginative practice (SQA, 1999c) was still poorly understood in terms of its intended capacity for developing individualised student answers.

This appears problematic in two respects. Firstly, in that even in one of the ‘succeeding schools’ IP results continued to be modest and secondly in noting that teacher and students appeared to prefer practical learning environments which were geared to group rather than individual problem solving environments (e.g. improving attacking options in basketball), where the focus of learning was more precisely defined. Arguably, these types of problem solving lessons enabled a greater understanding of team principles of play to develop, but are less effective, as yet, in adequately assisting students to develop a personalised account of quality performance which includes future performance goals and expectations. The consequences of this difficulty for the development of students’ analytical skills are therefore further considered below and in the concluding chapter.

6.3.2 The development of students’ analytical skills

Results indicated that all schools experienced operational difficulties in putting into practice an internally integrated curriculum. While there were differences between schools in many crucial aspects of teaching and assessment, a notable feature across all schools is the ongoing differences between achievement levels in the two learning domains (Performance versus AP and IP). In School 9, for example, the difference between the domains for 2003 (78.7<->52.9) was the smallest for any of the schools in the sample (Table 14). However, it was still greater than that which existed for the same school four years earlier in 2000 (76.2<->58.6). Thus, the pedagogical complexities of delivering HSPE appear to present sustained problems for the development of students’ analytical abilities, even in a school classified as ‘succeeding’. Therefore, over the years 2000-2003, the situation appears not to have improved, with student difficulties in linking analysis processes with

underpinning content knowledge remaining, and with attempts to make improvements exacerbated by students' weak comprehension of key concept details in each area of AP (student interviews 2 and 3 and school AP results).

Overall, possessing improved understanding might have assisted students in developing an improved vocabulary about performance-led learning, which could then have transferred to written tasks where developing a personal understanding from open-ended enquiry is necessary. However, questions in group interviews about how students generally developed their process skills and content knowledge understanding frequently indicated that students could more easily describe the narrative storyline of what occurred when performing rather than display an ability to discuss how their understanding of related key concepts influenced their performance. This evidence matches the pre-research phase analysis (3.7) where the relative success of being able to describe performance experience is due, in part, to the straightforward advice students received from teachers. As one student described it (School 9) 'you came to know it automatically, that a video of performance could be viewed repeatedly, could be viewed in slow motion and enabled you the performer to view their performance.' By contrast, improving content knowledge understandings, for example, by explaining the integrated connections between 'principles of effective practice' and 'effective performance' was much more complex for students to comprehend.

Consequently, success in processing data rarely linked to the development of understanding about key concept content knowledge. For this reason many students displayed confusion about the meanings of skills and fitness terms. Accompanying analysis of the feedback provided by the Principal Assessor for HSPE highlighted that for all schools it was usually the same areas of content; mental factors influencing performance, setting training goals, the importance of concentration and feedback in skill learning, which proved difficult to integrate. These findings indicate that improving the levels of attainment realised by students has been frequently hindered by

students' weak comprehension of key concept detail; a situation which was particularly acute in some areas of content knowledge.

A further legacy of students' lack of content knowledge understanding was the lack of transfer from performance-led learning to fulfilling the demands of the IP. Making relevant connections through an investigative cycle proved problematic without the types of teacher assistance and frequent revisions which characterised the procedures adopted in the 'rote' schools. One student (School 9) commented that:

I think its' good course, however, I don't see the point of the Investigation. The Investigation was the worst as you were not really sure what was required for the title you were doing even though you could see other students' examples from past years. Other than that things went quite well and the unit analysis tests meant that you knew what you were doing.

This type of comment was typical of many students and reflects the extent to which it was the unit AP assessment which provided security about analysis processes and clarification of appropriate content knowledge. Many of the Group interviews highlighted difficulties in students understanding the fundamental requirements of open-ended writing, which were underpinned by their collected data about performance, their appreciation of the demands of activities and knowledge of associated key concepts (Simpson, 1990). In this respect, the bite size unit assessments appear to have the potential to be helpful in assisting students in more completely realising the aims of the curriculum provided teachers' judgements of national standards are accurate.

6.3.3 Comparisons between sampled schools' results and national assessment results

Scrutiny of the national assessment profile for all schools involved in HSPE from 2000-2003 and of its predecessor HGPE provides evidence about the ongoing attainment difficulties experienced by

students, and the extent to which national assessment results have camouflaged pedagogical and attainment problems to date. Table 16 highlights the national mean figures in the three HSPE 'units' (Performance, AP and IP) relative to the marks available in each unit (as indicated by figures in brackets). Disparate levels of competence are apparent and this is problematic as students are expected to achieve a unit pass (half the available marks) prior to completing the final course award assessment. Evidence indicates (Table 15) that for many students the intended security provided by the unit assessments has often been misleading due to teachers' limitations in making accurate competence judgments. These limitations were particularly apparent in one of the trying schools (School 5), where half the students achieved a lower grade than expected despite it being the lead teachers' fourth successive year at presenting the award.

Despite these attainment problems, there was between 1996 and 2003 a quadrupling in the number of students gaining an 'A' pass award at Higher level, due typically to increases in Performance marks and the influence of an increased weighting for this unit (Tables 16 and 17). However, even though mean AP figures have risen by 50% over eight years few students can comfortably work at unit standard (the equivalent of 30 out of 60 marks in the course award assessment) as can be noted from the mean HSPE marks (Tables 16 and 17). Thus, the increase in numbers passing the overall award tends to mask underlying and ongoing pedagogical and attainment problems. For example, in one of the trying schools (School 5), five students still achieved an 'A' grade award despite the teachers' limitations in making accurate competence judgments about national examination standards and the poor school AP assessments results recorded in Session 2002-2003 (Table 13).

Bearing in mind that in 2003, the respective pass marks required were 100 marks (out of 180 available marks) for a 'C' pass award, 113 for a 'B' pass award and 126 marks for an 'A' pass award (SQA, 2003b), the high Performance mean marks resulted in a national average of 113.9 marks (75.8 for Performance, 24.5 for AP and 13.8 for IP) being set. This is nearly 14 marks above

the minimum required for a ‘C’ pass award (SQA, 2003b). Consequently, some students in the sample were able to achieve high levels of overall attainment even though the AP marks were modest. For example, one student achieved an overall ‘B’ pass award when only receiving 9 out of the 60 marks available in AP (School 6). Another student received an overall ‘A’ pass award when only gaining 14 out of the 60 marks available in AP (School 8).

Table 16: The national mean figures for each area of HSPE from 2000 through to 2003.

Year	Number of students	Performance (Course weighting 50%)	Analysis of Performance (AP) (Course weighting 33.3%)	Investigation of Performance (IP) (Course weighting 16.6%)	Pass marks % (% of students in each pass bracket)			
					A	B	C	(Pass)
2000	3464	74.5 (90)	24.0 (60)	12.7 (30)	17.5	26.1	30.2	(73.8)
2001	3699	76.0 (90)	24.7 (60)	15.1 (30)	28.6	31.2	23.6	(83.4)
2002	3696	75.8 (90)	23.3 (60)	14.5 (30)	25.8	30.6	24.6	(81.0)
2003	3970	75.6 (90)	24.5 (60)	13.8 (30)	26.2	29.8	24.5	(80.5)

Table 17: The national mean figures for each area of HGPE from 1996 through to 1999.

Year	Number of students	Performance (Course weighting 40%)	Analysis of Performance (AP) (Course weighting 40%)	Investigation of Performance (IP) (Course weighting 20%)	Pass marks % (% of students in each pass bracket)			
					A	B	C	(Pass)
1996	2677	48.4 (60)	16.4 (60)	13.6 (30)	6.1	16.3	29.4	(51.8)
1997	2967	49.7 (60)	19.3 (60)	11.6 (30)	5.5	17.0	31.4	(53.9)
1998	3067	50.4 (60)	20.1 (60)	11.9 (30)	6.1	16.7	33.1	(55.9)
1999	3106	51.6 (60)	21.4 (60)	13.1 (30)	7.2	18.7	30.3	(56.2)

These examples are of concern for, as noted (Chapter.3.7), comparisons between HGPE and HSPE were not expected to produce these consequences. At the inception of HGPE, the policy making members of the Joint Working Party were particularly keen to ensure that the Scottish Universities Council on Entrance (SUCE) credited HGPE as being an acceptable Higher for entry to tertiary education. Using extended written assessment answers as an indicator of students’ underpinning content knowledge was influential in persuading SUCE of the acceptability of HGPE. In this respect, current HSPE results appear to mirror wider educational concerns over the standards of ‘easy’ practically based subjects as opposed to traditional academic subjects elsewhere in the United Kingdom (Clyde, 2003). An article in *The Times* (14 August, 2003) “Pass rate soars as

students chase ‘easy’ A Levels” reflects the prominence of this matter when it was announced that the ‘A’ level pass rates for practically-based awards had reached 95.4%.

Overall, this review has highlighted the problems which exist in verifying standards and some of the affects this might pose for the status and credibility of HSPE. Due to the importance of these issues the final chapter will discuss some possible solutions to these problems.

6.4 Conclusion

There is no compelling evidence so far that teachers’ enactment of the HSPE rationale can lead to high levels of authentic attainment on a continuous basis. In these circumstances, it is evident that the credibility issues which have so perplexed many PE researchers and teachers (Brewer, 2003; Green, 2001) in their quest for academic recognition are only likely to be exacerbated by findings from many aspects of the second phase of research. Therefore, the current situation of leaving the SQA to derive complex arithmetically driven solutions to resolve problems with the imbalances in student levels of attainment is unsustainable, especially as evidence from the second research phase has indicated that the ‘rote’ schools have devised strategies which can bypass the recommended teaching and learning advice altogether (SQA, 1999c). Overall, evidence has highlighted the need for research to analyse the fundamental conceptual challenges of integration and assessment in a way that is informed by a ‘clearly articulated view of learning’ (Kirk and O’Flaherty, 2003, p. 16). With the recent growth and importance attached to high-stakes examinations in PE nothing less is required.

In summary, the key finding which emerged from the second phase of data collection was that it was proving difficult for teachers to deliver sustained improvements in teaching, learning and assessment. The imbalance between standards of performance and analysis of performance remains despite the improvements in the national profile of results which has accompanied the re-weighting

of course components following the introduction of HSPE. Students were unprepared for the scale of the learning and assessment challenges encountered on HSPE. Limited content knowledge of key concepts particularly characterized students' problems in consistently securing high levels of attainment.

However, if there are other factors which could explain the comparatively poor examination achievements of students, then these factors need to be researched as well. The major factor which emerged from teacher interviews was that it was written assessment instruments which were placing students at a disadvantage. Consequently, a third research phase, which compared oral and written assessments, was required.

Chapter Seven: RESEARCH PHASE THREE (2003): ACCURACY AND AUTHENTICITY OF ORAL AND WRITTEN ASSESSMENTS IN HIGH-STAKES SCHOOL EXAMINATIONS IN PHYSICAL EDUCATION

7.1 Introduction

The need for a third research phase was given impetus by Phase 1 teacher interview findings, where much of the poor student performance was attributed to the adverse effect of written assessment instruments. Specifically, therefore, the following research questions were defined. These are:

- were students from all schools able to express their knowledge by oral assessment better than they were able to complete written assessments on similar AP tasks?
- did students from low attainment 'trying' schools possess a lower level of content knowledge than those students from other schools (high achieving through rote learning and assessment and high achieving through authentic learning and assessment)?
- did students from schools characterised by rote learning and assessment have a lower level of process skills and content knowledge understanding than those from schools with authentic learning and assessment, even though written results were of a similar standard?

7.2 Background

Prior to consideration of results and related discussion there are three background issues which require some initial explanation. These are, firstly, the accuracy of oral and written assessment instruments, secondly, the motivation and engagement of students for oral assessment and, thirdly, authentic assessment and authentic achievement.

7.2.1 Accuracy of oral and written assessment

There is broad agreement about the accuracy and usefulness of oral assessment for assessing students' knowledge and applied problem solving abilities (Brown and Knight, 1994). Joughin (1998, p. 369) notes that 'oral assessment may be a preferred way of measuring a candidates

knowledge when there is a particular need to ensure that the responses are actually the candidates'. In addition, Ahmed et. al. (1999) highlight that, as well as not having to teach written communication skills, a further advantage is that the interactive nature of oral assessment allows students to complete tasks in a positive assessment climate. In order to promote positive teacher/assessor and student relationships the use of prompts when asking questions can take many forms in oral assessments (Ahmed et. al., 1999). It can occur through repeating the original question, allowing more time for the question to be answered and through providing additional structured support. For comparative reasons in the present research it was necessary for the degree of support to remain as consistent as possible between oral and written assessment.

However, a feature of written assessment is that as student ability increases the degree of teacher support is often reduced. In oral assessment it is frequently the opposite, with prompts being used to guide students towards increasingly complex answers. As the assessment criteria were identical in this research, it was important that the cordial climate within the interview setting was high, but that the degree of prompting towards answers remained modest (where possible) and was limited to trying to help students see the opportunities which existed in questions. In this regard, Joughin (1998, p. 375) has commented that 'when students anticipate that their understanding will be probed through follow-up questions, they may tend to seek understanding of the material they are studying rather than relying on their ability to simply reproduce what they have read.' While there is usually no specific time demands in oral assessment, the interviewer has to use professional familiarity with the content knowledge associated with the questions as a help in deciding how to proceed with the assessment (Joughin, 1998), as it is the teacher rather than the student who decides when to move on. The 'leave and go back' strategy common in written assessments is not available to students in oral assessment.

7.2.2 Oral Assessment – Student motivation and engagement

According to Ahmed et. al., (1999), individual differences will affect the nature of the conversation between teacher and students. Some students, for example, are more likely to remain quiet in an oral assessment when they might be tempted into writing something for which they have no adequate evidence in a written assessment. The opposite is also possible. What is also pertinent to consider in this research is that the analysis of teacher-student dialogue acknowledges that the normal rational co-operative basis for conversation could be affected by the teacher as interviewer both asking the questions and knowing the answers. In this respect, the teacher interviewer has to ensure that he/she appears interested so that any student anxieties about the interview becoming an interrogation can be avoided. Such pressures can often occur as the interviewer ‘can exert considerable pressure on a listener by asking a question’ (Low, 1991, p. 118), especially when it is anticipated that students will agree to offer some form of spoken response.

Specifically within a PE study Chen et. al. (2001) examined the influences of situational interest and concluded that for positive student-task interaction, enjoyment rather than challenge is paramount if students are to explore novel tasks. Enjoyment is enhanced by the interviewer explaining their reasons for seeking information, especially when attempting to gain the confidence and trust of those being interviewed (Low, 1991). Thus, in HSPE, to express genuine interest in student explanations about the diversity of their performance experiences would be a useful approach for ensuring that the interviewer is somehow ‘on the same side’ as students (Low, 1991, p. 120).

7.2.3 Authentic assessment and authentic achievement

In recent years, assessment theory and practice has attempted to recognise the significance of the context for learning (Wiggins, 1993; Kirk and O’Flaherty, 2003). Consequently, conceptions of assessment have considered the appropriateness of the assessment instrument as well as how to

contextualise assessment to make it a more authentic experience for students. As Cumming and Maxwell (1999, p. 178) note ‘the concept of providing authentic assessment has been embraced enthusiastically by policy-makers, curriculum developers and practitioners alike, and enshrined in the literature on curriculum and assessment as a desirable characteristic of education.’ The basic characteristics of authentic assessment include constructive learning, disciplined enquiry, higher order thinking and problem solving (Newmann and Archbald, 1992). These characteristics become evident through the production rather than reproduction of knowledge and, through evidence of an in-depth understanding of personal value for students.

The need to distinguish between authentic assessment and authentic achievement has been stressed by Cumming and Maxwell (1999). Authentic assessment concerns itself predominantly with the *method* of assessment, while authentic achievement concerns itself predominantly with the *nature* of assessment. Cumming and Maxwell argue that it is necessary to consider the inter-relationship between the method and nature of assessment. At face value, AP examinations in HSPE contain many of the required characteristics for authentic assessment of achievement. For example, at Higher level the assessment criteria at Grade ‘A’ (SQA, 1999c) require students to:

- give a clear full and detailed description and explanation of selected performance examples (*method*)
- use a full range of relevant concepts and knowledge to make full and detailed judgements about performance (*nature*)
- make clear, full and detailed suggestions for a course of action which is most likely to lead to improvements in performance (*method and nature*).

In offering advice on the framing of assessment tasks, Cumming and Maxwell (1999) outline how the expectations of students require precision in order for assessment questions to be meaningful. This avoids problems associated with questions being contrived where the potential for gaining

marks appears camouflaged from students. Here, Cumming and Maxwell (1999, p. 186) distinguish between ‘first order expectations’ and ‘second order expectations’. Again, at face value, these expectations match the demands within AP examinations in HSPE, where questions balance the importance of underpinning key concept knowledge (first order expectations-nature of content knowledge) with the narrative process based storyline (second order expectations-methods of explanation) of the performance issues being explored. The balance between these expectations is also reflected in the definitions of teaching and learning cycles, which can lead to authentic achievement (HSDU, 1998b; SQA, 1999c).

However, as Cumming and Maxwell (p. 187) note ‘it is all too easy for the second-order expectations to overwhelm the first-order expectations’- a case of the medium becoming the message. Many student performances in HSPE examinations have fallen into this trap. Consequently, the third phase of research has to address the challenge and stimulus levels of questions in order to provide a clear distinction between method and nature questions in oral assessments. In short, connecting authentic assessment with authentic attainment requires consideration of the extent to which underpinning content knowledge links coherently to the first order expectations that are inherent in the questions asked. By contrast, authentic assessment without authentic attainment may result if there is a student preference for process skills description, yet limited engagement with the content knowledge requirements of questions asked.

7.3 Results

7.3.1 Comparison of oral and written assessment in Higher Still Physical Education

Contrary to the teachers’ assertions which initiated this comparative study, most students performed better in the written rather than the oral assessment (Table 15). Only one student (by a modest 4 %) scored higher through oral assessment than by written assessment. However, these comparisons need to recognize that the sampled students performed better than the national average for AP

written assessment, achieving 52% as opposed to 41% of the marks available. Correspondingly, three quarters (75%) of the sampled students achieved an eventual ‘A’ grade for the final HSPE award (Table 18), as opposed to 21.6% nationally (SQA, 2003b).

Nevertheless, results do appear to suggest that the categorization of schools highlighted earlier still applies. In both assessments, the high achieving ‘successful’ schools achieved higher results (63% by written assessment and 45% by oral assessment) than schools characterised by rote teaching and assessment (48% written assessment, 35% oral assessment). In turn, the ‘rote schools’ achieved higher marks than lower achieving ‘trying’ schools (44% written assessment, 34% oral assessment). Overall, there appears little supporting evidence that students were disadvantaged by written assessment instruments, when the variables between methods were, as far as possible taken into account. Furthermore, comparison of both assessment instruments has highlighted ongoing differences between ‘successful’ schools (Schools 9 and 10) and ‘trying’ schools (Schools 5 and 6).

Table 18: A comparison between students results in the Analysis of Performance national written examination and in oral assessment interviews.

School	Student	Final Course Grade	Analysis of Performance (written assessment /60marks) National mean 41%	Analysis of Performance (oral assessment /60 marks)	Difference between written and oral assessment
School 5	1	A	43%	40%	+ 3%
	2	C	46%	40%	+ 6%
School 6	1	A	45%	30%	+ 15%
	2	C	42%	27%	+ 15%
School 7	1	A	65%	40%	+ 25%
	2	A	62%	43%	+ 19%
School 8	1	A	23%	27%	- 4%
	2	A	42%	30%	+ 12%
School 9	1	A	60%	53%	+ 7%
	2	A	83%	58%	+ 25%
School 10	1	A	65%	33%	+ 32%
	2	C	42%	37%	+ 5%
Ave			52%	38%	+ 14%

7.3.2 Authentic assessment and authentic achievement in Higher Still Physical Education

In comparing assessment instruments it is timely to consider whether students from ‘rote’ schools had lower levels of process skills and content knowledge understanding than those students from

‘successful’ schools. In this respect, it appears of merit specifically to contrast School 7 and School 9, which were the two highest achieving schools (Table 15). Once again, oral assessment results indicate lower attainment. Students at School 7 achieved 42% of the available marks for oral assessment as opposed to 63% of the available marks when written assessment instruments were used. Students at School 9 achieved 56% and 72% of the available marks when oral and written assessment instruments were used (Table 18). When methods of assessment are contrasted, results indicate a 21% difference for School 7 as opposed to 16% for School 9 (Table 18). When the difference between an ‘A’, ‘B’ or ‘C’ grade are frequently decided by small percentage boundaries, these differences in level of attainment could affect decisions regarding access to tertiary education if the method of assessment were ever to be changed.

7.4 Interpretation and Discussion

7.4.1 Comparison of oral and written assessment in Higher Still Physical Education

Student oral and written assessments indicate that the categorisation of schools described earlier still applies. In addition, students were capable of securing more marks through written than oral assessment. However, an analysis of oral assessment answers can prove illuminating in highlighting particular areas of student competence and lack of competence. The main point which emerges from such analysis is that oral assessment interviews exposed students’ lack of underpinning content knowledge to a greater extent than written assessment answers. There were frequent examples from the oral interviews of students making feasible opening explanations about the performance context before running into content knowledge difficulties as questions developed.

In the two examples below, promising early answers on fitness and training begin to founder when it becomes apparent that the content knowledge informing fitness measurement and planning a training cycle is poorly understood. In example 1 the student’s answer becomes progressively less certain, while conversely in example 2, extraneous information about Christmas and the weather

enter the discussion rather than anything more substantive on progression and intensity levels in training. The contrasting approaches chosen for addressing content knowledge difficulties reflects earlier commentary from Ahmed et. al. (1999) about how individual differences can affect student reactions in oral interviews.

Example 1

Teacher: Can you explain, in detail, one effective method of testing aerobic or anaerobic capacity?

Student: It's effective if you test it by sprinting and then you can see what your anaerobic capacity was because you're using a lot of oxygen in the one burst.

Teacher: And do you know of any test you might use to fulfil that? Did you use any in your course?

Student: I don't think we did, I think it would be stuff like run a hundred metres and then you'd breathe into one of those lung things – capacitors.

Teacher: You have an idea you have used equipment of that sort to test your lung capacity and this would reflect your anaerobic fitness?

Student: Yes

Example 2

Teacher: Can you define periodisation?

Student: No. I don't know what that means.

Teacher: When you started your hockey season in August and you were organising your training programme for the whole season – what kind of training might you consider using during the year?

Student: Obviously it would come under certain times of the year, where maybe at Christmas times there's holidays so you would obviously have to change your training programme. At Christmas time there's also more time where you might be eating and drinking so you would want to take these factors into consideration. You've also got the weather factor that you'd have to bring into consideration when you're getting into November, December it's beginning to get raining so if you're doing your training outside it might put you off and you might have to go indoors or you could say alright I'll go out only three times a week when it rains or snows, whatever, or you could change your plan and say right I'm not doing it if it's raining I'm going to have to spend more time in the gym and work in there.

Teacher: Let's be very specific about this training programme which you've developed. What do you understand by the term 'tapering down'? What are the advantages of it?

Student: I'd say that's like buckling down and getting down to hard work? No, I don't really know.

One reason why students found oral assessment difficult was that the questions asked covered the entire breadth of key concept coverage in the different areas of AP. By contrast, the approach adopted in national examinations involves a choice of three questions with each question only covering parts of the identified examinable content. Analysis of student answers indicates that when questions are framed in shorter, more precise ways, students' difficulties increase (as highlighted in

examples 1 and 2). This is the opposite of teachers' interview commentary, which presumed that chunking questions into smaller parts would benefit students. Content knowledge weaknesses may also have occurred because it is difficult for students to bluff their way through an oral answer. Keeping the focus predominantly on generally describing performance without specifically discussing associated content knowledge was problematic for students; a difficulty added to by not having a choice of question option available.

In short, it appears that the holistic framing of questions (in written examinations) might to some extent camouflage the limited AP content knowledge many students possess. As Cumming and Maxwell (1999) have noted, problems of the method becoming the medium are not uncommon. This might not be particularly surprising as the most common type of question chosen by students follows a 'cycle of analysis' (3.7.2), which begins with an introduction on the strengths and weaknesses of performance and methods used for analysing performance before proceeding to the consideration of relevant content knowledge.

Further analysis of oral assessment findings supports earlier work (Ahmed et. al., 1999) regarding the variety of ways in which prompting might be necessary to both promote positive achievement and ascertain student's levels of understanding. Example 3 highlights this point.

Example 3
Teacher: So the benefits of doing an assessment at the beginning of the session would be what?
Student: What do you mean?
Teacher: So you do the fitness test at the beginning, so why would you do it at the beginning?
Student: Well if you didn't do it at the beginning you wouldn't know at the end if you'd improved. So you do it at the beginning, do your fitness programme and skills programme and retest yourself at the end and therefore you see an improvement. If you just did it at the end you wouldn't know what you were like at the start.

In example 3 only a slight rewording of the question is sufficient to trigger some further relevant details from the student. Understanding whether a simple re-phrasing of the question or additional support is required appears to draw on the expertise of the interviewer both in terms of comprehending the difficulty of the content knowledge being considered plus their ability to

monitor the climate within the oral assessment. Accordingly, evidence from this research reflects findings from Joughlin (1998) about the professionalism required of interviewers when completing oral assessment.

7.4.2 Student motivation and engagement in oral assessment

There was evidence that the positive climate within oral assessment led to a co-operative basis for conversation developing (see example 4), despite the interviewer asking the questions and knowing the answers.

Example 4

Teacher: Does that test your aerobic capacity or your anaerobic capacity?

Student: Definitely aerobic.

Teacher: What would you say would be a test that would be associated with anaerobic - any ideas about that?

Student: Shuttle runs again and sprints. I suppose if you did sprints you'd definitely be working anaerobic, you wouldn't be able to do many I expect. You'd be knackered.

Teacher: How would you feel knackered?

Student: Not so much legs and arms, you'd be more sort of knackered in the chest, you'd be puffing and panting a lot probably be sweating quite a lot as well, because you're not working with oxygen.

Example 4 highlights the informality shown in the language chosen (knackered) by the student and which was reflected in the next question asked by the interviewer. Overall, this informality enables genial conversation and a healthy rapport between interviewer and student to develop. There is also an indication of some student understanding, even though this might not be adhering to the academic reporting protocols usually required in tertiary education. The capacity for oral interviews to develop a positive sense of cooperation, enhanced by a sense of achievement for students and a grasp of student understanding for teachers is one of the biggest potential benefits of oral assessment. Thus, while the results from the first two phases of research have raised difficulties about using the current HSPE qualification as a benchmark of readiness for entry to tertiary education (Table 14), oral assessment evidence might nevertheless provide clues to viable future assessment procedures.

William (2003) advocates a review of the national curriculum in England based on the current lack of reliability of some summative assessment procedures and proposes instead a greater use of teacher formative assessment and the testing of a greater proportion of the curriculum. Evidence of the formative benefits of oral assessment in this research appears to endorse such a proposal. Oral assessment could either be used to support discussion-based practical workshops, as an instrument of unit assessment providing feedback to teachers about the differentiated abilities of students, or for asking questions which cover a broader range of examinable content than occurs presently with written unit and course assessments.

7.4.3 Authentic assessment and authentic achievement in Higher Still Physical Education

The main finding from comparing oral and written assessments was that many students had limited underpinning content knowledge of key concepts in AP. This has pedagogical implications, but also assessment implications if higher and more authentic levels of achievement are intended. As highlighted earlier, the crafting of rote assessment answers has become widespread and adversely commented upon (SQA, 2001b; SQA, 2002b). The evidence from analysis of oral assessment answers was more encouraging with 'stock' answers proving more difficult to generate. The prompting and interactive dialogue which develops as students attempt to become more familiar at using and applying the language associated with HSPE is beneficial in overcoming the limitations of responding with a set answer. Furthermore, it was noted from the schools with high levels of attainment through rote prepared answers, that oral assessment answers were often more varied than written assessment answers. Examples 4 and 5 from School 7 exemplify two different methods for explaining a structure in volleyball, one based initially on the importance of roles and formations (example 4) and the other on the importance of possessing different performance qualities (example 5). In these examples, oral assessment provided some evidence of purposefully linking answers to

the production of divergent, individual (authentic) reasoning when supported by careful and interested follow-up questioning.

Example 4
Teacher: Tell me about a structure in one activity you've been doing?

When we're playing volleyball we've got a set structure. It's normally two setters and two spikers are set around – we've got – it's easier to show in diagrams. At the net we've got a setter, this is when we're receiving service, and we've got – it goes – we've got the net and we've got 1,2,3 4. One and two are the setters, three and four are the spikers. The spikers are there to block or spike, the setter in the middle. The first structure we had was everyone plays every position. So we'd rotate round and that means that 50% of the time we've got players in the position that we want them and the other 50% we don't. So we also use a two man block. When setter number three moves over to two or four depending on where the spikes going.

Example 5
Teacher: Tell me about a structure in one activity you've been doing?

Like in volleyball, the position's you're playing, why you're playing there really. Depends on who's your best spiker, who's your best setters and things and the qualities that each player has. For example because you're tall you might play in the spiker's position, blocker's position because you'd be able to get height in your jumps, block and see more when you're jumping up through the spike you'd see more of the court so you can hit it downwards. Whereas a smaller person would be more likely to play in the setters position because they can get under the ball quicker because they're small and you'd need to have a high skill level in that area as well.

7.5 Conclusion

In general, the evidence from comparing oral and written assessment has provided some unexpected insights. While the benefits of higher levels of attainment (anticipated by many HSPE teachers) have not been realized there has been some encouraging evidence that the method and nature of completing oral assessment can usefully be incorporated in teachers' curriculum decision-making. This can be especially valuable for both teachers and students in receiving feedback about levels of process skills and content knowledge understanding. Furthermore, it has the potential to enhance the learning climate within groups, by providing information for students about the crucial experiences, skills and knowledge interconnections required within an internally integrated curriculum. As such, oral assessment procedures can move beyond the problems of considering that assessment 'is something that is done to pupils' (Kirk and O'Flaherty, 2003, p. 7) and reveal more promisingly how productive learning and assessment gains might be realized.

In summary, the key findings which emerged from the third phase of data collection were that students were not able to express their knowledge better through oral assessments as opposed to written assessments as was anticipated by the teachers participating in the research. In fact, the opposite was almost entirely the case. Students' results from both methods of assessment reflected the 'types' of teacher abilities evident during the first phase of data collection. As students' lack of content knowledge was more apparent during oral interviews, using oral assessment evidence diagnostically could be helpful for teachers in highlighting students' learning priorities.

7.6 Implications for further research

Over the past three chapters a progressive research focus on teachers' curriculum decision-making, the learning experiences and attainment of students and a comparison of assessment test instruments in HSPE has taken place. Findings indicate that teachers' and students' high degree of agreement about the rationale for HSPE has not been matched by high levels of year-on-year authentic attainment. Consequently, there are a number of policy and practice issues which require further investigation. However, as yet, the Arrangements document itself for HSPE (SQA, 1999c) has only been reviewed in terms of how policy has been implemented in schools. This appears problematic for while the rationale for HSPE is appealing to teachers and students alike, it cannot be automatically assumed that it is achievable. Therefore, it is necessary that the rationale itself is critiqued for as Henwood (1998, p. 37) notes it is important that research involving analysis of discourse 'must be prepared to ask new kinds of questions'.

In this respect, the PE community in Scotland is fortunate in that recent policy documents (SEB, 1993) have been critiqued, in detail, by a philosopher of physical education, Andrew Reid (Reid, 1996a; Reid, 1996b; Reid, 1997). Furthermore, Carr (1997) and Parry (1998) have added to related discussions about some of the philosophical assumptions underpinning developments in examination awards in PE through responding to arguments developed by Reid. At the time of

HGPE and HSPE policy formation, research by Reid (1996a; 1996b) did not directly influence the policy making process, which was intent on dovetailing the government's concerns for increasing attainment and accountability with teachers' intrinsic beliefs about the practical nature of the subject. Consequently, teachers have not yet been philosophically or conceptually challenged by the introduction of examination awards in PE. Rather, they have been charged with ensuring that awards adhered to the curriculum and assessment intricacies required by the relevant policy documents. Thus, Chapter 8 will examine the conceptual coherence of the rationale advanced for HSPE, to ascertain the extent to which some of the problems experienced by teachers in putting policy into practice might be as much to do with conceptual matters as they are to do with operational concerns.

Chapter Eight: ACHIEVING CONCEPTUAL AND CURRICULUM COHERENCE IN HIGH-STAKES SCHOOL EXAMINATIONS IN PHYSICAL EDUCATION

8.1 Introduction

In exploring whether the conceptual adequacy of the rationale advanced for HSPE might be contributing to the problems experienced by teachers in putting policy into teaching, learning and assessment practice, this chapter begins with a specific critique of the writings of philosopher of physical education, Andrew Reid, who argued for the greater importance of practical knowledge within examination awards. However, as there are other worldwide examples of high-stakes examination awards, notably Advanced Level PE awards in England and Board of Senior and Secondary School Studies (BSSSS) Senior Physical Education in Queensland Australia, the rationale and arrangements for these awards is also reviewed (8.3) with initial analysis focussing on the benefits of these awards in contributing towards students' entry requirements for tertiary education. Thereafter, in 8.4, some of the major challenges in achieving curriculum recognition for PE awards within a high-stakes examination context are reviewed with 8.5 providing new thinking on how phenomenological approaches to teaching, learning and assessment could inform curriculum planning. This is important to consider, for unlike the practical knowledge emphasis argued for by Reid (1996a; 1996b), a phenomenological approach could, it is argued, complement rather than contradict prevailing curriculum discourses and imperatives.

8.2 A conceptual review of the arguments that have shaped the rationale for examination awards in Physical Education in Scotland.

One possible adverse effect of the waning influence of teacher education institutions in shaping policy (Thomson, 1993) is that critical voices from outside the traditional policy community can often remain unheard. This appears the case with Reid (Reid, 1996a; Reid, 1996b) who objected to the rationale advanced for HGPE, and many of the philosophical assumptions upon which examinations awards were based. Yet, from first hand recollections of the policy construction

process in action, it was apparent that arguments advanced by Reid were not considered when the purposes of awards were discussed.

Consequently, in light of the teaching, learning and assessment problems reported it is pertinent now to analyse the writings of Reid, especially as examination considerations have become such a dominant influence on curriculum discourses and on the lives and careers of many teachers (Green, 2005). This review is also necessary because Reid inadequately considered everyday policy and practice issues (McNamee, 2005), and more generally because conceptual reviews of PE, to date, have often been defined from a 'predominantly dualist position that tends to view our bodily aspect as of only comparatively minor importance' (Whitehead, 1990, p. 3).

In addition to Reid (Reid 1996a; Reid 1996b) various other authors have critically examined many of the complex conceptual issues associated with articulating a coherent rationale for a high-stakes school examination award in PE (Carr, 1997; Kirk and Rovengo, 1995; McNamee, 2005; Parry, 1998). Many contributions are underpinned by the writings of Peters (1966) and Hirst (1974), two prominent philosophers of education who contrasted the benefit of content knowledge imperatives with other areas of school-based socialization, which while generally beneficial, does not provide the same capacity for reflection that is considered crucial for human growth. In curriculum terms, Hirst (1974) identified different forms of knowledge which were able to reflect different theoretical or intellectual modes of enquiry; a philosophical position which places PE (and, indeed many other practically-based subjects) in a challenging and often awkward position as effectively it highlights that while PE could make reasonable claims for inclusion as part of schooling (Barrow, 1981) it would lack sufficient educational warrant to merit inclusion as a high-stakes examination award. Inevitably, this academically inclined position placed examination awards in PE in an unpromising position from which three options are possible (Carr, 1997).

Firstly, PE could accept what Reid (1997, p. 6) refers to as the ‘incorrigibly marginal status’ of the subject. This view has tended to be unpopular. However, some authors e.g. Carr (1997) has argued that it might not be as unacceptable as first anticipated. Carr posits that activities such as swimming, might not be considered (or framed) as providing an illuminating reflective experience, but are nonetheless part of what many would consider an important skill to acquire as part of schooling. Hence, a coherent justification for the benefits of PE could be developed along such ‘utilitarian lines’ (Carr, 1997, p. 200). As such a rationale is less relevant when arguing for the inclusion of PE as a high-stakes school examination award, this form of justification is not considered again in this chapter.

Secondly, it could be argued that the Peters-Hirst academic conception of education is essentially correct, yet with some careful adjustment and redefinition PE could be accommodated within it. Carr (1997) and Griffey (1987) are against attempting to map out such a route and Reid (1996a; 1996b) comments on the added challenges involved in such an enterprise, which include recognising that assessment procedures for testing, validating and verifying knowledge are expressed predominantly through language. Thus, while performance-led practically based learning might underpin teaching contexts, assessment may well require language based oral or written evidence. Reid (1996a; 1996b) considered that it was a mistake for policy declarations (SEB, 1993) to argue for the use of a small range of practical activities as the basis for the theoretical development of analytical and investigative skills. Reid (1996a; 1996b) was concerned about the integration strategies of arguing that physical activities, when pursued for their own sake, lacked educational validity however these activities could acquire educational significance when pursued for intellectual or academic goals. In essence, to be included in a curriculum which values mental activity, PE would need to move beyond its intrinsic claims for curriculum inclusion (enjoyment, health) and develop an instrumental justification (powers of thought, reasoning, understanding) which highlights, in effect, that PE can contribute to purposeful cognitive engagement as well.

Thirdly, it could be argued there are other forms of knowledge apart from strictly academic forms. Reid (1996a; 1996b) argues there is a conceptual confusion (a category error) between the nature of practical activities and the purposes of education, which has manifested itself in debates about the theoretical and the practical, the educational and non-educational and implicit and explicit expressions of knowledge. Reid asserts that knowledge can be demonstrated by actions as well as by words and symbols. Consequently, it is possible to fulfill the knowledge requirement for education through practical knowledge. Attempts at this form of justification reflect earlier studies by Ryle (1949) and within PE specifically by Carr (1979). Carr (1997) latterly began to doubt his earlier position, and this placed him in conflict with Reid whose developing critique attempted to argue for an ever more sophisticated pluralistic interpretation of practical knowledge arising from the different activities common to PE programmes (Reid, 1997). However, by this time (Reid, 1997) Reid was considering PE as a compulsory (core) subject which most school students would be required to complete rather than as an examination subject, which was selected by only some students. This point was never clearly alluded to by Reid, yet is crucial to understand for analysis purposes. In short, the aims one might describe for a set of core (but not formally examined) learning experiences are likely to be very different from those ascribed to PE when designed as an examination award. Furthermore, the critique of Reid (1996a; 1996b) implied that Peters (1966) had failed to understand the educational significance of skills (as exemplified as practical knowledge) in comparison with more obviously academic or theoretical forms of knowledge. This greatly upset Carr (1997, p. 200) who commented that:

Peters was certainly against regarding certain kinds of skills – those required for sports and games – as educational, but it is bordering on calumny to suggest that so able and well informed a philosopher failed to see the significance of skill and procedural reasoning for education in a wide range of scientific, artistic and moral practices.

Reid (1996a; 1996b) and Carr (1979) were united however in arguing that education has its own ends. Thus, Reid and Carr had the comparative luxury of arguing for the philosophical purity of awards in ways which were unaffected by concerns about entry standards for tertiary education and the need for producing a more efficient workforce, for example; even though as McNamee (2005, p. 4) reminds us this position ‘cuts across the grain of ‘common sense’ thinking.

Overall, this short review has highlighted some of the complexities which exist in framing examination awards in PE. However, as other worldwide examples of high-stakes examination awards exist it is beneficial to review these awards in order to comprehend in as great a detail as possible how the complexities associated with integrating practice and theory have been addressed elsewhere. Accordingly, a short review of Advanced Level awards in England and BSSSS Senior Physical Education in Queensland, Australia follows.

8.3 A review of Advanced Level Physical Education awards in England and Senior Physical Education in Queensland, Australia.

8.3.1 Advanced Level Physical Education awards in England

PE examination awards became part of the curriculum in England from the early 1980’s, with the first awards at Advanced Level standard becoming generally available from the mid 1990’s. From 2001 onwards three different awarding bodies, Edexcel Foundation, Oxford, Cambridge and RSA Examinations (OSR) and Assessment and Qualifications Alliance (AQA) have offered a revised national examination featuring similar design characteristics. Scrutiny of the various award specifications indicates there is limited opportunity for assessment by practical demonstration with the bulk of assessments being completed by written coursework, investigations and examinations (AQA, 2005a).

Different authors (Piotrowski and Capel, 2000; Kirk et. al., 2002) have commented on the status and credibility benefits which influenced the introduction of examination awards, and thus it is

perhaps not surprising that Advanced Level awards are characterised by a greater commitment to theoretical learning rather than practical experiential learning. Accordingly, Kirk et. al. (2002, p. 208) note that ‘A challenge for physical educationalists is to address the ways in which teaching and assessment can better integrate these elements’ as greater integration might help reduce tensions within the teaching profession, where concerns exist about the preference for content knowledge rather than practical knowledge (Green, 2005; McNamee, 2005). However, the requirement of the accredited examination boards (Edexcel, OCR and AQA) to articulate their awards with the specifications defined by the Qualifications and Curriculum Authority might increase the difficulty of this occurring, as evidenced by the content knowledge imperatives apparent in the range of support texts available (Wesson, et. al., 1998; Davis et. al., 2000). These resources are written in the third person and contain few references or vivid examples of actual student experiences.

For students who can develop an accurate and detailed understanding of appropriate content knowledge there is clear subject-centered evidence of readiness for tertiary education, but for teachers, creating rich learning environments which can lead to authentic assessment remains a complex professional task given the preponderance of written assessment instruments. Perhaps unsurprisingly therefore, attainment is still relatively uncommon at the highest standards possible. In 2004, only 11.9% of students achieved the top award, an ‘A’ pass, compared with an average for all awards of 22.4%. Despite being the thirteenth most popular subject out of thirty-four Advanced level awards available (with 25.5% of students choosing the award) only two awards (Information and Communication Technology and General Studies) had a lower percentage of ‘A’ pass awards (QCA, 2004). A further concern is that one Examiner’s Report for Advanced Level PE in 2005 indicates rote teaching, learning and assessment problems exist, for example, it was noted for a unit of written work where students were devising a Personal Exercise Programme (PEP) that:

Many centres are obviously well organised and prepare students fully for the demands of the PEP. However, it must be noted that the coursework should be the students own work.

Frequently, evidence was seen illustrating pre-prepared worksheets simply being copied into the piece of coursework, with no allowance for activity. Centres should be reminded that this may be classed as malpractice...

(AQA, 2005b, p. 13)

8.3.2 Senior Physical Education in Queensland, Australia

Introduction

The development of Board of Senior and Secondary School Studies (BSSSS) Senior Physical Education arose out of the recognition by teachers and policy makers alike that a review of curriculum was required with the review process being characterized by a high level of active teacher involvement in the design and implementation of the award (Dudley et. al., 1990). As Penney and Kirk (1998a) acknowledge ‘...the development of a new Senior Level Physical Education syllabus has been neither imposed, nor rushed and has appeared to recognise that involvement ‘ownership’ and time are critical for achieving anything more than ‘surface level’ or tokenistic change in education.’

The syllabus was informed by the writings of Arnold (1979) who considered that practical activities should be internally integrated with various areas of knowledge and understanding. Specifically, Arnold (1979) noted that learning should occur ‘*about*’ where students improve their level of knowledge and understanding as a result, of studying physiology, biomechanics, sociology; ‘*through*’ where students acquire understandings as a result, of active participation in different activities – for example, understandings about fitness and aesthetic appreciation and ‘*in*’ where students acquire understandings as a result of learning the prerequisite skills for effective participation in different games and sports. From the earliest trial policy documentation, it was stressed that ‘the study of physical activity should not be divorced from the actual engagement in physical activity’ (BSSSS, 1992, p. 2).

Arnold's version of internal integration became contextualised through requiring students to 'acquire' (gather, recalling, comprehending and sorting information), 'apply' (interpret and analysis information) and 'evaluate' (hypothesise, predict and justify) information (BSSSS, 1995). This version of integration is reflected in the staff development programmes and specific texts which support learning (Kirk et. al., 1999; Amezdroz et. al., 2004) and in the assessment protocols which require integration between written, oral and performance assessment instruments. Thus, at every level in the curriculum decision-making chain from the rationale through to assessment of student outcomes, adherence to an internal integration model is evident, with the anticipated avoidance of a dichotomous theory-practical divide in teaching, learning and assessment.

BSSSS Senior Physical Education was introduced following a two-year trial stage and a two-year pilot stage. External evaluation was completed at each stage and evidence analysed by Subject Advisory Committees. To take part in the trial or pilot stage each school was required to supply ongoing monitoring data by replying to surveys, regularly attending meetings and providing records and observations of school-based developments. In addition, the school Principal (Head Teacher) was required to sign a statement of support containing relevant details about anticipated class sizes, the number of students who would be involved in the award and teachers' qualifications. As Dudley (1992, p. 33) points out, involvement in the programme is certainly 'not for all', but was only possible once necessary schools arrangements had been scrutinised and validated.

During the piloting of BSSSS Senior Physical Education lead teachers met for two (two-day) conferences to discuss implementation matters and at these conferences Kirk and Penney (1996) noted the ongoing commitment and enthusiasm of teachers for effective implementation. Nevertheless, Penney and Kirk (1997) raised concerns about the 'trickle down' or 'cascade' model of staff development in operation, where only one teacher per school was able to attend conferences, especially when this form of support was unavailable in later years, just at the time

when many less experienced teachers would be facing various implementation challenges for the first time. Overall, however Penney and Kirk (1998a) indicate that ‘...the timeframe for the development of the syllabus seemed to acknowledge that changes to well established thinking and practices will not happen overnight and that syllabus and curriculum development has to progress at a pace that can facilitate gradual change.’

Teaching BSSSS Senior Physical Education

From a review of the pedagogical practices teachers adopted in the pilot schools there was evidence of some teachers making the transfer from reproductive (direct) teaching approaches to teaching through more productive (indirect) problem solving teaching approaches (Penney and Kirk, 1998a). There was also evidence that some teachers were not so willing to make these types of adjustments as they found the new integration challenges rather daunting, or that misunderstandings about what was intended occurred. These misunderstandings often resulted in students being overly responsible for their own learning, as teachers overreacted when facilitating learning. Penney and Kirk (1998a) also reported that some teachers felt comfortable using familiar pedagogical practices when teaching new content knowledge and more open-ended productive teaching approaches only developed once the security provided by an improved grasp of content knowledge detail had occurred. Overall, Penney and Kirk (1998b) considered that productive teaching strategies were most effective when the links between content knowledge and teaching strategies were as natural and feasible as possible. McDonald and Brooker (1997b, p. 99) endorse these views, noting that implementation of these types of awards ‘must encourage reflection of how and why specific content is chosen and what standards are in line with the educational goals of the subject.’ Consequently, Penney and Kirk, (1998a) considered that greater rigour was required by teachers in exploring whether multiple learning benefits were actually occurring in practical settings, or whether the focus was restricted to improvements in practical performance alone.

In helping teachers address these integration dilemmas, the draft syllabus (Queensland Studies Authority, 2003) contains a section on 'Language Education Quantitative Concepts and Skills' which outlines how the construction and meaning of language in contextualised settings uses different language genres to develop students' powers of analysis. Significantly, this level, type and form of advice are not so available with other awards. Consequently, BSSSS Senior Physical Education appears better at providing specific advice on the importance of language in dialogue and discussion within integrated teaching and learning environments.

Assessment of BSSSS Senior Physical Education

Penney and Kirk (1998b) indicate that there was encouraging evidence of integrated assessment in action as there was a firm commitment towards criteria based assessment formats, which were introduced into all Queensland secondary schools in 1986. As Broadfoot (1995, p. 5) noted 'Queensland secondary education is long known for its radical approach to assessment'. In this system, teachers compare students' work against criteria and make judgements about the quality of work without recourse to inter-student comparisons, or the rank ordering of students against each other (Wyatt-Smith, 1999). In introducing these assessment approaches, the BSSSS intended that by defining criteria and standards, teachers' estimates of student attainment would be clear, accurate and explicit and that achievement levels would be increased if students were informed about the criteria for attainment. Wyatt-Smith (1999, p. 219), when discussing this process in action, notes that when teachers read their students' work 'they were engaged in learning something more about how their students used language, the influence of writing conditions, the effects of how they taught and even about language itself.' Consequently, teachers were continually updating the knowledge about the learning abilities of different students and the efficacy of their teaching.

In summary, to aid understanding a tabular comparison of the main characteristics of Advanced Level awards in England, BSSSS Senior Physical Education in Queensland, Australia and Higher Still Physical Education in Scotland is presented.

Table 19: A comparison of the main characteristics of Advanced Level awards in England, BSSSS Senior Physical Education in Queensland, Australia and Higher Still Physical Education in Scotland.

Area of programme	Characteristic of Advanced Level Physical Education in England and Wales.	Characteristic of BSSSS Senior Physical Education in Queensland, Australia.	Characteristic of Higher Still Physical Education in Scotland
Rationale	Rationale mostly in the form of pragmatic course specifications. Award will provide ‘for the development of knowledge, skills and understanding through the study of Physical Education and participation in sport and physical activity’ (AQA, 2005a, pp.7).	Coherent and consistent with views of leading philosopher of PE (Arnold, 1979). Clear teacher endorsement for attempting to achieve multiple objectives through internally integrated curriculum. Learning ‘in’, ‘through’ and ‘about’ performance.	Ambitious yet unproven rationale designed to appeal to teachers’ intrinsic beliefs about the practical applied essence of PE, and to students’ enthusiasm for high levels of practical activity. Subject of critique from Reid (1996a; 1996b) for lack of philosophical coherence.
Introduction	Examinations in PE as emerging orthodoxy (Green, 2001). Centrally directed policy initiative, expected to assist in enhancing status and credibility of PE departments. Opportunity to improve on subject marginality. Pragmatic consensus.	Wide involvement and consensus of practising teachers in the formation and development of policy. Schools required to successfully complete pilot period before gaining approval to implement award.	Centrally directed policy initiative, with all high schools expected to join programme. Levels of staff expertise not analysed or doubted in the formation of programme, even though performance-led nature of the programme had limited research endorsement.
Teaching	Little advice on teaching approaches with greater advice available on specific methodologies for teaching standardized units. Functional outcomes based advice provided. Lack of integration between theoretical and practical learning.	Some teachers could adopt constructivist type pedagogy approaches advocated. Evidence that some teachers could teach new content in familiar ways and that some teachers had difficulty with new content and teaching approaches.	Untried and ambitious pedagogy approaches advocated, ‘critical and imaginative practice’ (SQA, 2004a). Evidence that many teachers found such approaches particularly challenging to utilize as part of professional practice.
Evaluation	Some teacher concern about the balance between ‘theory’ and ‘practice’ (Green, 2005). Examination evidence that the complexity of course planning and degree of knowledge expertise required of teachers is leading to sustainability problems (AQA, 2005b).	Some content links to performance considered natural and others rather contrived and difficult to sustain. Conceptually, the extent to which performance can indicate wider understandings left unresolved for the present. Research about the transferable benefits of practical learning required.	Schools labeled as either ‘trying’, ‘rote’ or ‘succeeding’ (Thorburn and Collins, 2003). At national level, SQA review reduces the width and depth of content knowledge but retained teaching methodologies as still assumed to be deliverable (SQA, 2004a).
Assessment	Separate assessment of students’ performance and analytical abilities. Attainment in ‘theory’ struggling to match that for ‘practical’ (Green, 2005). Ongoing year-on-year problem (AQA, 2005b).	Integrated oral, written and performance assessment. Lack of requirement for national based normative comparisons made integrated assessment easier to implement. ‘Practice overtaking theory’ (Kirk and O’Flaherty, 2003).	Separate assessment of students’ performance and analytical abilities. Policy imperative for national normative assessment has had adverse effect on assessment practice, especially through rote preparation of answers.

8.4 The challenges of achieving curriculum recognition through high-stakes examinations in Physical Education

The following discussion begins by critiquing the extent to which any of the curricula examined to date (HSPE, BSSSS Senior Physical Education and Advanced Level awards) are likely, as currently framed, to provide rich and successful integrated learning and assessment experiences for students. These issues are important as they contain implications for the nature and value of knowledge associated with awards and for the future design of high-stakes examination awards in PE.

8.4.1 The influence of philosophy on policy and practice

The rigour shown in BSSSS Senior Physical Education for exploring whether multiple learning benefits were occurring in practical settings, or whether the focus was restricted to improvements in practical performance alone, represents a promising point of initial analysis for examining the influence of philosophy on policy and practice. Penney and Kirk (1998a) were interested in considering whether extending the concept of curriculum integration to ‘another level’ might be merited. This, crucially, was not explored further in any conceptual sense with the issue remaining unresolved. Conceptually, Penney and Kirk (1998a) were beginning to grapple with the extent to which it is likely that students when ‘*learning through*’ different practical experiences are ‘*learning about and in*’ to a sufficient depth to justify curriculum inclusion as a high-stakes school examination subject. Can, for example, it be taken to ‘another level’ and assumptions or assertions made about the extent to which observable practical performance ability is evidence of an applied understanding. Regrettably, the questions posed by Penney and Kirk (1998a), though teased out for initial analysis, were not subsequently pursued as the focus moved onto considering equity and standardisation issues, which surround the assessment of practical performance (McDonald and Brooker, 1997b), and which led to a similar review of assessment advice for SGPE (SEB, 1997b).

Accordingly, while the different awards contain clear references to assessment criteria, there is nothing which confirms that the learning benefits of integration are evident in both practical as well as written tasks (Kirk and O’Flaherty, 2003). Hence, the type of practical knowledge justifications advanced by writers like Reid (1996a; 1996b) remains untested in curriculum practice to date. Consequently, it is necessary to extrapolate from conceptual ideas what the precise value and benefits of practical knowledge might be. Reid (1996a; 1996b) considers that practical knowledge can be defined not just by observations of practical performance, but, by ‘inferential procedures’, which show rational powers (Reid, 1996a, p. 98), and accordingly he believes that:

The criterion of practical knowledge is practical performance, and the mastery of the rational techniques or methods which constitute the inferential link between purpose and achievement is shown in their constant and flexible use. Assessment of performance, then is assessment of practical knowledge; and if some test of theoretical or propositional knowledge is required in addition, it can only be because we consider such knowledge to be worth having, either for its own sake or for its interest and relevance in illuminating the background to, or context of, the physical activities which are our main concern.

(Reid, 1996a, p. 99)

Therefore for Reid (1996a; 1996b) by implication it is the rules, laws, and tactics of activities, which may be useful for supporting purposeful participation, and, if necessary this knowledge which can be emphasised and assessed in any examination award context. Consequently, participation would only be enhanced on rare occasions through accompanying biomechanical or aesthetic references and such like, and certainly should not be beholden to these types of references as the rationale for an award. The curriculum implications of Reid’s suggestions would presumably result in courses characterized by a considerable bias towards practical performance assessment (practical knowledge); yet these intentions appear rather limited when set beside the general aspirations for increased entry to tertiary education and the carefully selected, integrated curriculum

aims of learning ‘through’, ‘in’ and ‘about’ in BSSSS Senior Physical Education, for example. Furthermore, in limiting students to knowing little more than the rules and procedures of activities is it ever likely that the marginal status of PE could be improved? Parry (1998) argues that Reid’s thinking offers little beyond valuing the hedonic pleasure of participation in physical activities; arguably a rather shallow justification if developed as the basis for inclusion as a high-stakes examination award. In a Scottish context, it remains doubtful whether PE was ever capable of arguing for such a wide ranging conceptual revision of knowledge and departure from the standard academic (Hirst-Peters) viewpoint. For Scottish Universities, at least, it was apparent that the 50%/50% assessment weighting (Chapter 3.6) was an effective arrangement for securing student interest, confirming subject status and for enabling higher level awards in PE to contribute towards students’ entry profile for tertiary education.

While the critique of Reid (1996a; 1996b) is helpful in highlighting some of the complexities in framing award intentions the type of teaching, learning and assessment difficulties currently besetting higher level awards received only cursory analysis from Reid (McNamee, 2005). As such, a remaining integration problem is the extent to which content knowledge and practical knowledge can merge through experiential learning to achieve something greater than improvements in practical performance. Is there something better available than a practice / theory model of teaching and learning; a position in itself which tends to confirm the marginality of PE (Green, 2001)?

8.4.2 Siedentop and the ‘root’ problem

In many respects awards like Advanced Level PE represent the logical extension of turning the study of PE into an academic discipline; a process which can be traced back to Henry (1964) and to debates about what is worthwhile content knowledge for teachers to understand. Kleinman (1973, p. 98) noted that:

For these physical education intellectualists, the value and joy of activity in and for itself was insufficient...our attention was subtly directed away from the crux of the matter; from the fundamental grounds upon which this field rests – the activity itself. It suddenly became fashionable not to engage in sport and physical activity but to verbalise about it, explore its implications, utilize it physiologically, psychologically, sociologically, philosophically, historically and God knows what else.

Reflecting similar views, Siedentop (2002a) voiced concern about the lack of student teachers' performance experiences in different activities in teacher education programmes; suggesting that PE was becoming beholden to often abstract forms of academic knowledge in kinesiology, biomechanics and so on, to the detriment of a more pragmatic pedagogical content knowledge for teachers. Siedentop (2002a, p. 372) argued that the core status problem was having a debilitating effect on school PE programmes and notes:

This, then, is the root problem – the direct study of sport skill and strategy through experiential learning is not considered to be of sufficient academic quality ... Learning, basketball, volleyball, and gymnastics – and all the associated issues of training, technique, performance and strategy – are not worthy of formal academic credit ... If we cannot confront that core problem, and somehow resolve it, then physical education in schools is doomed.

Thus, while Advanced Level PE may have partially addressed some of the issues regarding formal academic worthiness, it is doubtful whether the award as currently framed can ever adequately address the 'root problem' identified by Siedentop (2002a, p. 372). Reid (1996a, p.15) has long wondered about the 'pleasure-enhancing potential' of high-stakes examination awards in PE and doubts, particularly about the inherent value of Advanced Level PE, remain until data about the quality of students' learning experiences and the authenticity of attainment is available. This is

despite encouraging evidence regarding student uptake numbers (QCA, 2004). By contrast, BSSSS Senior Physical Education appears to value the knowledge generated through students' active participation in different practical activities to a greater extent. Thus, the award might be 'inherently valuable and valuable as means to further valuable ends' (McNamee 2005, p.14). However, despite such promising evidence of 'practice overtaking theory' (Kirk and O'Flaherty, 2003), a degree of caution is required until there is longitudinal data available about how school-based practical experiential learning benefits students' later learning in tertiary education. McNamee (2005) urges more robust analysis when reviewing claims for the value of knowledge associated with PE and comments in particular on how there has been little critique of Reid's work to date. This is a particular problem for as Reid notes:

It would be absurd to suggest that its value (practical knowledge) is of the illuminative kind we associate with intellectual understanding; we do not play tennis or football in order to deepen our understanding of the world and our place in it (1997, p. 11).

This quote appears to typify the crucial weaknesses in arguments developed by Reid (1996a; 1996b; 1997); an unwillingness to consider the associated benefits of students' reflecting on their intentions when experiencing practical activities and of the critical thinking gains which might feasibly accompany informed participation. Furthermore, such a position appears unpromising when Reid's central premise is that, in effect, it is education's conception of PE which is at serious fault. Reid (1996a; 1996b; 1997) for example makes little attempt at critiquing how participation could develop students' metacognitive abilities and provide richer insights about performance experiences. This is despite comment from Luke and Hardy (1999, p. 38) that there 'is a distinct lack of Physical Education research in this area even though it has been argued that metacognition may be the pivot or key to pupils learning processes if learning is viewed as active and strategic.'

Given the rather overly academic nature of Advanced Level PE, the lack of supporting research data about the transferable benefits of BSSSS Senior Physical Education and the ongoing imbalance in levels of attainment within HSPE, it is worth exploring whether other forms of curriculum planning might represent a better prospect for high-stakes examination awards in PE. Consequently, there now follows a fresh attempt to address these types of curriculum and professional challenges, for as McNamee (2005) has highlighted there are other conceptual options available to consider.

8.5 A phenomenological approach to curriculum planning: Implications for high-stakes examinations in Physical Education

McNamee (2005, p. 10) has noted a rather determined conservatism in conceptual reviews of PE to date, and while it may be that ‘to argue for the education value of physical education on the grounds that the playing of games conferred a wide-ranging cognitive perspective on the world would be barking up the wrong tree’ it may be, nevertheless, that an alternately framed and personalized account of experience could overtake the ‘root problems’ highlighted by Siedentop (2002a, p. 372), and, enhance the value and status attached to practically based high-stakes examination awards. With such aspirations in mind a phenomenological approach to curriculum planning, which is designed to complement rather than challenge the prevailing discourse of Peters (1966) and Hirst (1974) is presented, on the basis that a less restricted account of education which has ‘the capacity to open up the possibilities of living a full and worthwhile life’ is widely anticipated (McNamee, 2004, p.16), not least in Scotland (Scottish Executive, 2004).

8.5.1 The promise of phenomenology for physical education

Phenomenology ‘is the study of structures of consciousness as experienced from the first-person point of view’ (Smith, 2005, p.1). The essence of an experience is its intentionality; the meaning of events, the meaning of embodied action including kinesthetic awareness of one’s movements and the importance of sensations as they are experienced by the body. Phenomenology as a discipline

within continental European philosophy dates from the first half of the 20th Century; Edmund Husserl, Martin Heidegger and Maurice Merleau-Ponty being key figures in the historical development of phenomenology. What characterize phenomenological-based investigations are attempts to describe reality fully, as it is presented to our consciousness (Heidegger, 1962).

Husserl (1931, p. 6) argued that phenomenology is about the 'discovery of the essences of experience and provides a systematic and disciplined methodology for the derivation of knowledge.' The key is description. Rather than being a set of constructs and principles typical of previous philosophical systems, Husserlian phenomenology is defined by intentionality, essences and phenomenological reduction. Intentionality refers to cognitive rather than practical intentions, hence, the unease with the quote from Reid (1997, p.11) stating that 'we do not play tennis or football in order to deepen our understanding of the world and our place in it'. Viewed in a phenomenological sense, this is precisely what would be occurring. Students are critically thinking and continually reviewing their intentions in activities, and, setting goals and expectations accordingly. Such intentional reflection links to systematically describing the essences of experiences and subsequently to phenomenological reduction. The later process is designed to replace 'natural attitudes' (Sokolowski, 2000, p. 42) with more specific phenomenological attitudes, thus eliminating preconceived ideas and replacing them with analysis of specific intentions. This enables students to move from having empty intentions to filled intentions.

Accordingly, the logical structure of phenomenology involves linking specific forms of experiences (thoughts, perceptions, feelings) with associated content knowledge meanings. Therefore, for explanations of experiences and learning, what is required initially is a first-person ontology where rich narrative description is used to 'classify, describe, interpret and analyse structures of experiences' (Smith, 2005, p. 5). Repeated familiarity with similar types of experiences enables the language links between experience and content knowledge to become increasingly sophisticated and refined, for example, in describing in detail performance aspirations in different sporting

activities. Suitably framed, this could lead to the construction of pedagogical approaches which effectively attempt to merge personal experiences with content knowledge imperatives.

However, the complexity of articulating an account of student lived-body experience for examination awards in PE is added to by the language associated with explaining phenomenology. Philosophers of phenomenology, when writing about 'the body', are essentially referring to the 'lived body' rather than the 'physical body'. The earlier German language used in phenomenological writings enables linguistically the lived body (*Leib*) to be separately described from the physical body (*Körper*); sadly an option which is unavailable in the English language, where only one standard term (the body) exists. Consequently, it is of importance that justificatory accounts of the merits of examination awards in PE, which are informed by phenomenology avoid the pitfall of treating the human body as only a physical body that is 'investigated from the theoretical and experimental perspective of natural science' rather than conceiving of the body as a living body 'with its inner life and point of view' (Hanna and Thompson, 2003, p. 24).

A further challenge is the lack of sport related research studies which are available to review. Of the few which exist, Kerry and Armour (2000) provide a useful example of a deeper learning in action by contrasting how 'hitting the wall' in a marathon from a physiological point of view based on examining glycogen depletion would differ markedly from a phenomenological account informed by students' lived experience of running under these circumstances. The intention phenomenologically is that students lived experience of running under such stress would complement physiological understandings, as experience is the basis of developing knowledge. Accordingly, the experience of running provides the focus for reflection and later descriptions of performance. Objective study alone cannot provide this level of insight (Merleau-Ponty, 1962). In this guise, the preference for knowledge-led imperatives rather than performance-led imperatives

might be considered as a concern with Advanced Level PE awards, as essentially the course is being studied but only occasionally experienced.

8.5.2 An Introduction to Merleau Ponty

Among leading philosophers of phenomenology, Merleau-Ponty (1908-1961) explored in most detail how the body plays a crucial role not only in perception but in speech and language.

Consequently, the work of Merleau-Ponty is of particular interest to physical educationalists, as it describes the human body as the site for experience and knowledge, where bodily experiences should not be separated from cognitive learning. Merleau-Ponty (1962, p. 110) in his most influential text 'Phenomenology of Perception' (originally published in 1945) describes the 'body-subject' as an intelligent, holistic process which directs behaviours in an integrative fashion. The idea of the body-subject provides a way of conceiving relations between the body and the world without over privileging the role of cognition and under representing the centrality of the body in human experience.

Therefore, Merleau-Ponty was against the dichotomies of reason and emotion and mind and body, which have so often served to cast doubt on the contribution of PE to a balanced education. By contrast, Merleau-Ponty (1962) articulated a notion of lived space where the body-subject's experience is referenced through movement and language, and while there is some recognition of the socially constructed nature of experience, it is the pre-reflective knowledge of the body which enables an immediate relationship with meanings of the world to develop. Consequently, knowledge is not something to be understood in a dry and detached way, but rather 'sensed' or felt as the result of active engagement (Merleau-Ponty, 1962, p. 216). As Whitehead (1990, p. 5) notes 'The real value of the capacities of our embodied dimension is not realised in isolation from our surroundings but in intimate relationship with them'.

Pivotal to Merleau-Ponty's phenomenology of perception were two interlinked critical notions; the intentional arc and maximum grip. The intentional arc refers to the tight links between the body and world, whereby as skills develop and improve 'finer and finer discriminations of situations paired with the appropriate response to each' situation occurs (Dreyfus, 2002, p. 367) as a maximal grip or 'muscular gestalt' (Moe, 2005, p. 172) is used to refine movement responses. Within the world of sport specifically, Merleau-Ponty (1962, p. 169) provided an account of how players' movement responses relate to the spatial contours of the soccer field and notes that 'each manoeuvre undertaken by the player modifies the character of the field and establishes new lines of force in which the action in turn unfolds and is accomplished, again altering the phenomenal field.' In this way, play reflects 'dialectic of milieu and action'. On such an account of knowledge and experience Merleau-Ponty formed the view that the problems between a conscious mind and inert body can be overtaken. Thus, in effect as Hughson and Inglis (2002a, p. 6) note 'the body *is* the subject and the subject *is* the body'.

For Merleau-Ponty the contrast between experiential learning and the study of forms of knowledge needs to be reconsidered in ways which no longer excluded each other. If successful, a middle ground could inform progress and 'resolve the problems generated by the ontological divide which has characterized Western dualism since the time of Plato' (Dillon, 1997, p. 34). By implication, education should recognise the importance of experiential learning, and try to resolve pragmatic difficulties about how the essence of personal explorations can be captured within the assessment systems which operate for many subjects.

In all of this though there is the dilemma in high level sport that too much thinking might be detrimental to skilful performance; a situation where the simplicity of performance and a focus on the immediacies of perception-action coupling can become over complicated by trying to remember past performances or anticipate future performances. As Sutton (2007, pp. 767-768) notes in the context of cricket 'Having such batting skills and embodied memories, and being able to employ

them, is utterly different from knowing about them, or being able to describe them, or even remembering your earlier experience of them ...'. Put simply, absorbing yourself in the moment is preferable in sport at least to memorising past performances or imagining future performances.

However, Dreyfus (1991) in developing a phenomenology of expertise argues that as we experience phenomena in performance, varied experiences become meaningful as they are part of our bodily background knowledge and this is deeper and more elaborate in nature than mastery of the 'inferential procedures' (Reid, 1996b, p. 98) associated with merely conforming to the laws and rules of activities. Therefore, the 'cognitivist assumptions that human beings are carrying out rule-governed or programme-based information processing' (Moe, 2005, p. 171) require review. Thus, Dreyfus seeks to combine the insights of Merleau-Ponty's phenomenology of embodiment with dynamical approaches in cognitive science, where the extent to which 'expertise is so completely cut-off from conscious or articulable influence' (Sutton (2007, p. 768) will continue to be the subject of related research in neuroscience and motor learning as well as phenomenology. However, specifically with regard to how bodily background knowledge can articulate with rule governed characteristics associated with classical cognitive accounts of learning, Dreyfus argues that coping skills and deliberative action are the foundation of intelligibility and an 'opening onto the world and the things in it' (Dreyfus, 1991, p. 68). And, while there may be debate about how much of proceduralized learning evident in skill acquisition is the result of conscious or unconscious information processing, some authors have nevertheless started to consider more fully how 'underlying procedures and knowledge can be (at least partially) accessed with the right methods, such as verbal self-report protocols or thought sampling in which experts describe what they are doing and why' (Sutton, 2007, p. 769).

In developing his views, Dreyfus (2002) was heavily influenced by the original writings of Merleau-Ponty which outline how the intentional arc and maximal grip are important components

of experience that improve coping skills and which are enhanced by deliberative and sensitized practice. Thus, expert performance in a sporting context is represented by a superior memory for how skills are completed and this is acquired by regular and sustained practice. By way of example, Dreyfus (2002, p. 378) outlines that when viewing a picture in an art gallery that ‘there is an optimum distance from which it requires to be seen, a direction from which it vouchsafes most of itself: at a shorter or greater distance we have merely a perception blurred through excess or deficiency’. The body’s ability to move and sense the optimum viewing distance is enhanced by our getting a maximum grip on the situation and by finer and finer discriminations (intentional arc) aiding refinement. In a sporting context, as the body implicitly moves towards achieving an optimal relationship with the environment there is merit in exploring how these types of relationships can yield an accurate phenomenology of how movements are experienced, performed and evaluated, rather than relying on previous input and output accounts of information processing (Moe, 2005).

8.5.3 Implications for the construction of curriculum discourse

To some extent the strengths of a Merleau-Pontian approach for describing activity experiences and explaining how practices are completed adds to the methodological challenges posed when constructing a curriculum. Put simply, by ‘seeking to set out modes of embodied experience, a Merleau-Pontian approach can founder of the rock of its own ambition’ (Hughson and Inglis, 2002b, p. 7) with the language difficulty of explaining phenomenology and the lack of sport related research studies adding to the challenges involved in translating aims into coherent curriculum planning (Kerry and Armour, 2000). Thus, quite how to articulate carefully ‘the appropriateness of particular terminologies for the representation and comprehension of particular life-worlds’ (Hughson and Inglis, 2002b, p. 1) requires attention, and it is helpful in this respect that Inglis and Hughson (2000) attempted to explore the potential of soccer for developing a philosophical vocabulary for describing the movements of players on the field of play. Thus, the authors tried directly to understand player movements through language while recognising that the

phenomenon of movement is essentially non-verbal in character. Hughson and Inglis (2002a, p. 2) note that:

Merleau-Ponty's philosophy of corporeal movement is arguably a profound contribution to a very vexing problem, both within the philosophy of sport and philosophy more generally: How can one capture the evanescent qualities of corporeal experience within the categories of language.

Hughson and Inglis (2002a) thereafter attempted to design a phenomenological model for exploring the triadic relationship framed by the student (body-subject), the nature (form) of activities and associated content knowledge. Hughson and Inglis (2002a, p. 8) note that 'It is axiomatic of the above phenomenological relation that each part is a component of a totality'. Change in one area effects changes in other areas and, as such, students' performance abilities will affect their relationships to activities and to content knowledge. For example, in swimming a more able performer will develop a greater feeling and sensitivity for water and will consequently understand kinaesthetic feedback about performance in a more refined way. A less able swimmer will explore the same relationship but in a less sophisticated way. Thus, swimmers of different individual abilities can be incorporated within the same class and taught effectively, provided the relationship model sketched by Hughson and Inglis (2002a) is retained and the phenomenological perspective on learning is secured. Any elaboration on content knowledge which lacks personal performance insights based on experiential learning would be very different to those which included these types of references.

Accordingly, applying a Merleau-Pontian perspective on learning, would endorse in a pragmatic sense popular initiatives such as TGfU (Bunker and Thorpe, 1982), where as students begin to demonstrate an improved grasp of the movement, shape and flow of games, reflective performance analysis would focus on occurrences arising during games. However, for this approach to work

teachers would need to possess some of the acknowledged characteristics of expert teachers, such as carefully selecting questions (Ayers et. al., 2004), deploying a range of teaching approaches (Schempp et. al., 1998), possessing a detailed understanding of sporting activities (Amade-Escot, 2000), taking calculated risks (Brown and McIntyre, 1993), showing flexible control (Griffey and Housner, 1991) and setting appropriate student goals (Leinhardt and Greeno, 1986).

In offering advice on how to secure the intended phenomenological perspective on learning and capturing students' active engagement in the learning process, Hughson and Inglis (2002b, p. 5) advise that reporting must 'not fall into the trap of utilising language that conveys a false impression of jerky, stop-start forms of motion.' Hence, in continuing with the swimming example, swimmers describing the nature of propulsive movements and breathing patterns and their consequent effects on streamlining would be preferable to more leaden accounts of isolated parts of stroke technique. Hughson and Inglis (2002b, p. 5) indicate that a distinctive feature of the more able performer is the ability to exhibit 'very high levels of kinetic economy', and this should be evident as well in subsequent language based accounts of active engagement in practical activities. Therefore, when teaching swimming the overarching aim would be to provide experiences which help students increase their understanding of floating and being at one with the water. These experiences should enable the nature of swimming to become clear and for students to experience the efficiency benefits of flowing co-ordinated movements and controlled energy output with only modest water disturbance occurring. Thus, just as Peters (1973, p. 240) argues that an educated person should be able to 'connect up these different ways of interpreting his experience so that he achieves some form of cognitive perspective', so in an examination award context adequately focussing curriculum time on these types of fundamental performance (body-subject) experiences would be required, prior to moving to more formal modes of analysis to do with timed swims, stroke analysis and comparisons with model performers.

In trying to improve understandings about the nature of performance, critiquing the value of deliberative practice as a device for generating improvement is also required, and with these ambitions in mind it is noteworthy that within medical communities, programmes for the education of doctors have recently tried to blend experiential learning with more theoretical approaches (Claxton, 1997). The intention is that by including discussion as part of teaching and learning, students can begin to comment on their ‘hunches’ and ‘feelings’ about what works best. In these environments ‘the intuitive component of diagnosis either helps to limit the range of possibilities, so that a more manageable analytical approach may be adopted, or it leads to the early generation of hypothesis’ (Brawn, 2000, p. 158). Pursuing ‘intuition’ and ‘manageable analytical approaches’ through deliberative practice reflect the ambitions of cycle of analysis type teaching approaches provided that time to cultivate the language of performance and for authentic learning to occur is duly recognised. In addition, such a tight methodological focus reduces the risk of students generating fabricated or imaginary versions of experiences.

8.5.4 Implications for the construction of curriculum assessment

Despite the capacity of the swimming example just highlighted for fostering active student engagement in the learning process there is also the problem of how experiences which are corporeal in nature can be placed in discursive frames and used as the basis for autobiographical remembering. However, Hughson and Inglis (2002b, p. 7) outline how an interview with a famous and particularly talented soccer player revealed that ‘he seems rather at sea in a life-world where words are the phenomena to be orientated towards, not soccer balls.’ Merleau-Ponty was addressing these types of issues upon his death in 1961, and his last work ‘The Visible and the Invisible’ (1968) attempted to purge dualistic categories of body and mind; and the logical extension of these attempts if carefully pursued might have helped reduce the ontological dilemmas raised by the Hughson and Inglis (2002b) example, where there is a clear imbalance in the performance and language attributes of the soccer player identified.

The intentions of Merleau-Ponty to integrate the visible (lived-body experience) with the invisible (underpinning content knowledge) has matched curriculum attempts to link the context for learning with viable assessment instruments. At face value, AP examinations in HSPE contain many of the required characteristics for accurate and authentic assessment of achievement through the merging of the nature and method of assessment (Cumming and Maxwell, 1999). However, a further challenge is to consider the criteria by which the accuracy and authenticity of the student's life-world can be measured. In this light, Hughson and Inglis (2002b, p. 8) ask three initial questions, which if satisfactorily answered could be adopted as assessment criteria for the valid discursive frames required. The questions asked are:

- Does it tell us anything new about the life-world (student experience) being investigated?
- Does it capture well the detailed features of a form of life?
- Does it miss out or misrepresent phenomena that for other reasons we might take to be important in the particular context under scrutiny?

8.5.5 Phenomenology and Higher Still Physical Education

In taking ahead the curriculum discourse and assessment challenges previously highlighted in the specific content of HSPE, there is a need firstly to ensure that lived body experiences are 'given epistemological ascendancy as an avenue of access to the real world' (Kerry and Armour, 2000, p. 7), and secondly to ensure that writing about performance experiences is viewed as beneficial rather than a continuing problem. A starting point for emphasising the lived body nature of experience could come through recognizing that the overarching area of AP 'Performance Appreciation' contains the potential for personal reflections about performance to link with future goal setting. Performance Appreciation is designed to 'adopt a broad perspective' through which students can 'demonstrate knowledge and understanding of specific aspects of performance' (SQA, 1999c). Thus, by linking learning experiences to the other three areas of AP (Preparation of the Body, Skills

and Technique, and Structures, Strategies and Composition) students can immerse themselves in the types of critical and imaginative practice aspired towards (SQA, 1999c). When supported by data, these types of intentions could articulate a Merleau-Pontian informed philosophy by effectively merging students' lived-body experience with underpinning content knowledge (key concepts).

However, as noted earlier, the potential offered by Performance Appreciation remains relatively unexplored. A course requirement is that students complete analytical work and assessment answers in three out of four areas of AP (SQA, 1999c). To date, only around 2% of students study 'Performance Appreciation' while the remaining 98% of students complete study exclusively in the other three areas of AP (SQA, 2001b; SQA, 2002b; SQA, 2003b). Provided with a small degree of choice it is apparent which area of content knowledge remains least explored. Teaching students to answer only on the key concepts in the three specific areas of AP has proved preferable to developing links between the key concepts in Performance Appreciation and the other areas of AP. Thus, teachers prefer to teach content knowledge embedded in the distinct sciences and strategic elements common to games rather than trying to improve students' personalized accounts of performance experience, where the links between language and experience are particularly valued. However, teacher preferences are problematic, for as noted earlier (3.8) students prefer examination questions which feature a clear link to the cycle of analysis and to the narrative first hand account of their performance experiences (SEB, 1996; SQA, 1997a; SQA, 1998b; SQA, 1999b). As students currently have difficulties in connecting their answers in clear and detailed ways to areas of associated content knowledge it is perhaps unsurprising that this has set in motion a reduced set of performance experience for some students, which, to date, has failed to yield improvements in levels of authentic attainment realized (5.4).

To a great extent these problems might have been anticipated for, as Kerry and Armour (2000) note, promoting a personalized account of performance has often foundered on assessing personal

narrative alongside the assessment of content knowledge. How, therefore, can the face validity of a personalised account of practical learning experience be recognized alongside the reliability of recall and application of the content knowledge embedded in the distinct sciences and games strategies? What is needed is a range of assessment approaches that can authenticate experience. Entwistle and Smith (2002) advocated the use of grade related criteria for merging teacher target and student’s personal targets and these appear to be a feasible link between the assessment criteria for discursive frames highlighted by Hughson and Inglis (2002b) as necessary for authentic assessment and the grade related marking criteria which have been devised for assessing high, medium and low competence in analysis of performance (Table 20) (SQA, 1999d). If this situation was conveyed to teachers it might in due course provide some reassurances to teachers about how practical experiential learning can dovetail with authentic and high achieving assessment and encourage more teachers to experiment with the methodologies selected for teaching HSPE.

Table 20: The links between the key assessment questions identified by Hughson and Inglis (2002b), and the marking criteria and grade related criteria devised for the assessment of HSPE.

Hughson and Inglis (2002b) questions	HSPE - AP Marking Criteria	HSPE - Grade Related Criteria
Does it tell us anything new about the life-world (student experience) being investigated?	Describe and explain performance	<p>Candidates should be awarded high marks if they give a clear, full and detailed description or explanation of a performance.</p> <p>Candidates should be awarded half of the marks available if they give a clear and satisfactory description or explanation of a performance.</p> <p>Candidates should be awarded low marks if their descriptions or explanations are limited in scope and/or unsatisfactory in detail.</p> <p>Candidates should be awarded high marks if they use a full range of relevant concepts and detailed knowledge to make judgements which are sound.</p>
Does it capture well the detailed features of a form of life?	Demonstrate critical thinking and apply related concepts and relevant knowledge	<p>Candidates should be awarded half of the marks available if they use relevant concepts and knowledge to make judgements which are sound.</p> <p>Candidates should be awarded low marks if they use a limited range of concepts and/or knowledge to make judgements which are shallow.</p> <p>Candidates should be awarded high marks if they make clear, full and detailed suggestions for a course of action which is most likely to lead to improvements.</p>
Does it miss out or misrepresent phenomena that for other reasons we might take to be important in the particular context under scrutiny?	Demonstrate decision making skills and suggest improvements to performance	<p>Candidates should be awarded half of the marks available if they make clear and satisfactory suggestions for a course of action which is most likely to lead to improvements.</p> <p>Candidates should be awarded low marks if their suggestions for a course of action are limited and/or lacking in detail and are unlikely to lead to improvements.</p>

8.6 Summary

From a Merleau-Pontian perspective the rationale for HSPE is based on a feasible philosophical notion, however, in putting policy into practice the policy group defining the rationale for HSPE were not more aware, in broad terms, about how to authenticate and assess a practical experiential-based account of learning. In this respect, there was little of the joined up thinking associated with BSSSS Senior Physical Education (Kirk and O’Flaherty, 2003), where there is a much more apparent link between the work of Arnold (1979) and the subsequent policy advice offered to teachers. However, despite these weaknesses it does not necessarily mean that the rather inelegant wording in current policy documents (SQA, 1999c) should be dismissed. Rather it should be elaborated upon more carefully to highlight how practical experiential learning could complement rather than contradict current curriculum imperatives (Scottish Executive, 2004). Consequently, it is merited for researchers to further explore the writings of Merleau-Ponty and other philosophers of phenomenology, so that a more coherent justification for HSPE is advanced and the limitations of much of the conservatism associated with mind-body dualism is avoided. To date, despite the pedagogical and attainment problems experienced in HSPE, the curriculum model does nevertheless contain the flexibility necessary for promoting active student engagement in learning environments where the merging of performance and language is presented as natural and feasible and not as the source of student learning problems.

8.7 Implications for further research

The conceptual and new analytical thinking in this chapter is part of the progressive research approach adopted in this thesis. The intention is that discussions in this chapter can merge with earlier analysis of the pedagogical and assessment complexities associated with HSPE in the concluding chapter, where interventions designed to help address the shortcomings identified in this research are outlined.

Chapter Nine - FINDINGS, IMPLICATIONS AND CONCLUSIONS

9.1. Introduction

The concluding chapter summarizes the major findings arising from the different phases of applied research. Specifically, findings are reported relative to the types of interventions which might best address the shortcomings reported in this research. Accordingly, in the first instance the major professional issues associated with teaching, learning and assessment in HSPE are considered. Thereafter, how improvements in the professional development opportunities available to teachers could occur are reviewed. Finally, research interventions which could provide more detailed insights about how to improve practical experiential learning environments in high-stakes examination awards are outlined.

9.2 Professional issues associated with teaching, learning and assessment in Higher Still Physical Education

During the period of data collection HSPE was, like other National Qualification (NQ) subjects reviewed by the SQA. The review was instigated after the examinations crises that followed the introduction of Higher Still awards in 2000 (Raffe et. al., 2002) and which resulted in the Scottish Executive (2001b) recommending that there should be ‘course-by-course revisions of assessment arrangements’ (Bryce, 2003, p. 719) with the overall intention being to ‘reduce the complexity, variety and total volume of assessment in each subject’ (SQA, 2003c, p. 3). The review occurred when ‘the demise of the advisorate, the lack of a professional association to voice its concerns, and the rechannelling of HMI responsibilities’ (Brewer (2003, p. 592) made it a particularly challenging time for the findings of the review (SQA, 2003c) to be implemented in PE.

Nevertheless policy review intentions which appeal to experienced teachers’ beliefs are important, for as Capel (2005, p.123) notes ‘by the time teachers have 20 years of experience their values and beliefs are firmly established and unlikely to change’. Thus, with an ageing profession (Scottish Executive, 2005) and the teaching, learning and assessment problems which have been encountered

in HSPE to date, reducing the volume of assessment evidence and simplifying content knowledge complexities (SQA, 2004a) could reasonably be anticipated as a good move, given teachers' otherwise positive beliefs about examination awards.

However, the potential exists for progress to be an illusionary state. For even if teachers' beliefs and values match the rationale for HSPE it is still possible that teachers could lack the necessary expertise required to design productive learning environments and set individual learning targets, for example. Thus, teachers in this research appear to reflect the 'assimilators' and 'conceptualisers' descriptions offered by Faucette (1987), where some teachers (succeeding schools) agree with the rationale and possess the expertise necessary for effective curriculum decision making (assimilators) while other teachers (conceptualisers) agree with the rationale but lack the necessary expertise required (trying schools). Thus, while there was no evidence of 'knowledge disavowal' (Ennis, 1994a, p.164) or resistance to change itself, there was ongoing evidence of how difficult it was proving for many of the 'trying' schools to translate policy into effective practice.

In this respect, the lack of articulation and progression between SGPE and HSPE is likely to remain a problem especially as Principal Assessor reporting indicates that it is the same areas of content knowledge which are proving difficult for students to understand as they progress to Higher level (SQA, 2001b; SQA, 2002b; SQA, 2003b). Consequently, it might have been better if policy makers had acted more decisively in the recent reviews as changes may not be bold enough given the scale of the teaching, learning and assessment difficulties identified in this thesis. In this respect, the recent policy reviews match earlier developments in HSPE, where teacher concerns for student equity led to awards distinguishing between performance and analytical competences, even though this compromised a more complete understanding of the benefits of integrated teaching, learning and assessment. Therefore, the lack of dissenting voices about the NQ review (SQA, 2003c) should not mask the fact that many course progression challenges remain.

The danger is that without highlighting these critical professional issues clearly enough many teachers might seek instead some form of downloadable and perhaps compromised curriculum to support their teaching with a possible narrowing of the curriculum and ‘a shaving off of higher-order and critical thinking and a lowering of cognitive demand and intellectual depth’ (Luke, 2006, p. 123) emerging. As Brewer (2003, p. 589) noted during the development of HSPE ‘teachers knew what they wanted and were not slow to inform the reference group for HSPE charged with organising such information’.

In developing teacher expertise in creating productive learning environments it appears from the current research that improving students’ overarching understanding of associated content knowledge and defining more precisely the ways in which the cycle of analysis can be deployed is necessary. Both issues are now considered. Teachers reported during the first phase of data collection that it proved difficult to convey structural information to students about the overall aims of HSPE, and in later interviews many students were vague about the rationale for HSPE and the overall design of the award. Consequently, some teachers’ attempts at ‘critical and imaginative practice’ (SQA, 1999c; SQA, 2004a) were experienced by students as frustratingly unclear and lacking in structural clarity; a situation similar to the weak constructivism noted by Watts and Bentley (1991) in the National Curriculum in England.

However, a noticeable feature of the ‘succeeding’ schools was the use of detailed course induction programmes aimed at explaining the integrated nature of the rationale as well as the week-by-week teaching and assessment pattern for the award. These findings suggest that a greater teacher-led exemplification of the integrated connections between activities and key concepts appears necessary in establishing learning connectivity, for Lee and Solmon (1992) discovered in complex PE environments many students have difficulty recognizing the purposes of a task and of relating what

they are doing practically to the teacher's expressed aims of developing physical and mental abilities. Similarly, Luke and Hardy (1999) found that many students could describe tasks rather than explain the purposes behind them. As a result, the descriptions students developed were often superficial.

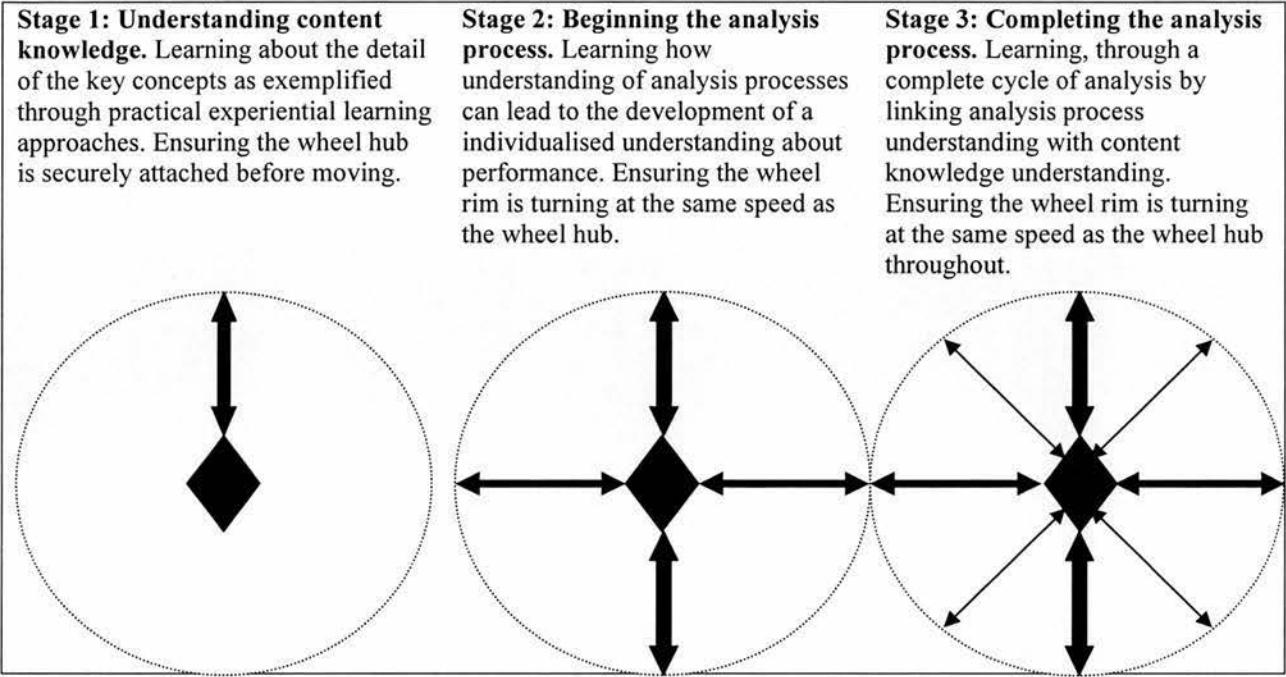
Therefore, the redesigned model of AP which arrived with the introduction of HSPE (SQA, 1999c) was never widely deployed. Consequently, most students were rarely challenged to connect the general area of 'Performance Appreciation' with the other three specific areas of AP. Performance Appreciation (SQA, 1999c) has only been taught in a few schools with answers to date remaining few in number and low in quality (SQA, 2001b; SQA, 2002b, SQA, 2003b). As Performance Appreciation was designed to help represent a viable teaching approach for effectively integrating practical experiential learning with the key concepts embedded in the other areas of analytical understanding many teachers may be adding to their problems in improving students' structural understandings and in creating productive learning environments through continuing to neglect this area of analysis of performance.

Secondly, as the cycle of analysis has been adopted by most teachers for completing analytical enquiry it is appropriate to review whether some degree of redefinition within the cycle might be necessary. Fundamental to any redefinition is assisting students to gain a more secure grasp of content knowledge from experiential learning. During the first two phases of data collection students often commented that 'needing theory' was necessary, and while overlong teacher exposition was rarely welcomed, there was recognition that knowing 'what you are talking about' was required if problem-solving learning approaches were to be effective. Consequently, the case for redefinition requires teachers to recognize that students' would benefit from a degree of content knowledge familiarity and understanding before the value of applying analysis processes as the driver for increasing levels of overall understanding begins.

However, adaptations to the cycle of analysis need not result in a change of emphasis in the rationale for HSPE (SQA, 2004a). Rather, what is proposed is that the opening learning period should more clearly exemplify the content knowledge which is embedded in the key concepts. Thus, the proposal advanced here is based on the notion that starting from where students are at, is vital (Swann and Brown, 1997), as is recognising that students need to see the 'big picture' (Dodds, 1999, p. 227) when attempting to improve the quality of their reflections about different performance experiences. This adaptation is necessary because analysis to date has consistently highlighted that students are more able to express the narrative story line of data collection (process knowledge) relative to their ability to explain the detail of how data collection links to relevant key concepts (content knowledge) (SEB, 1997a; SQA, 1998b; SQA, 1999b; SQA, 2000b; SQA, 2001b). In this situation the higher order intentions in questions (and their according mark values) are not clearly enough understood by students. Therefore, improving students' understanding of key concepts earlier in courses is necessary for connecting practical experiences with informed analytical enquiry.

Figure 4 outlines how a revised Cycle of Analysis of Performance might work in practice. Stage 1 begins by recognising the current weaknesses of students' attainment profiles as well as research evidence on teaching and learning (Abraham and Collins, 1998). Thus the first step is based on ensuring that students comprehend from their learning experiences the words and meanings embedded in the key concepts. This is necessary before stage 2, where students develop an understanding of the importance of analytical processes; a stage of learning which is made easier by informing students of the criteria for attainment (Wyatt-Smith, 1999). This ensures that the connections between analysis process and content knowledge understanding are as strong and complete as possible (stage 3).

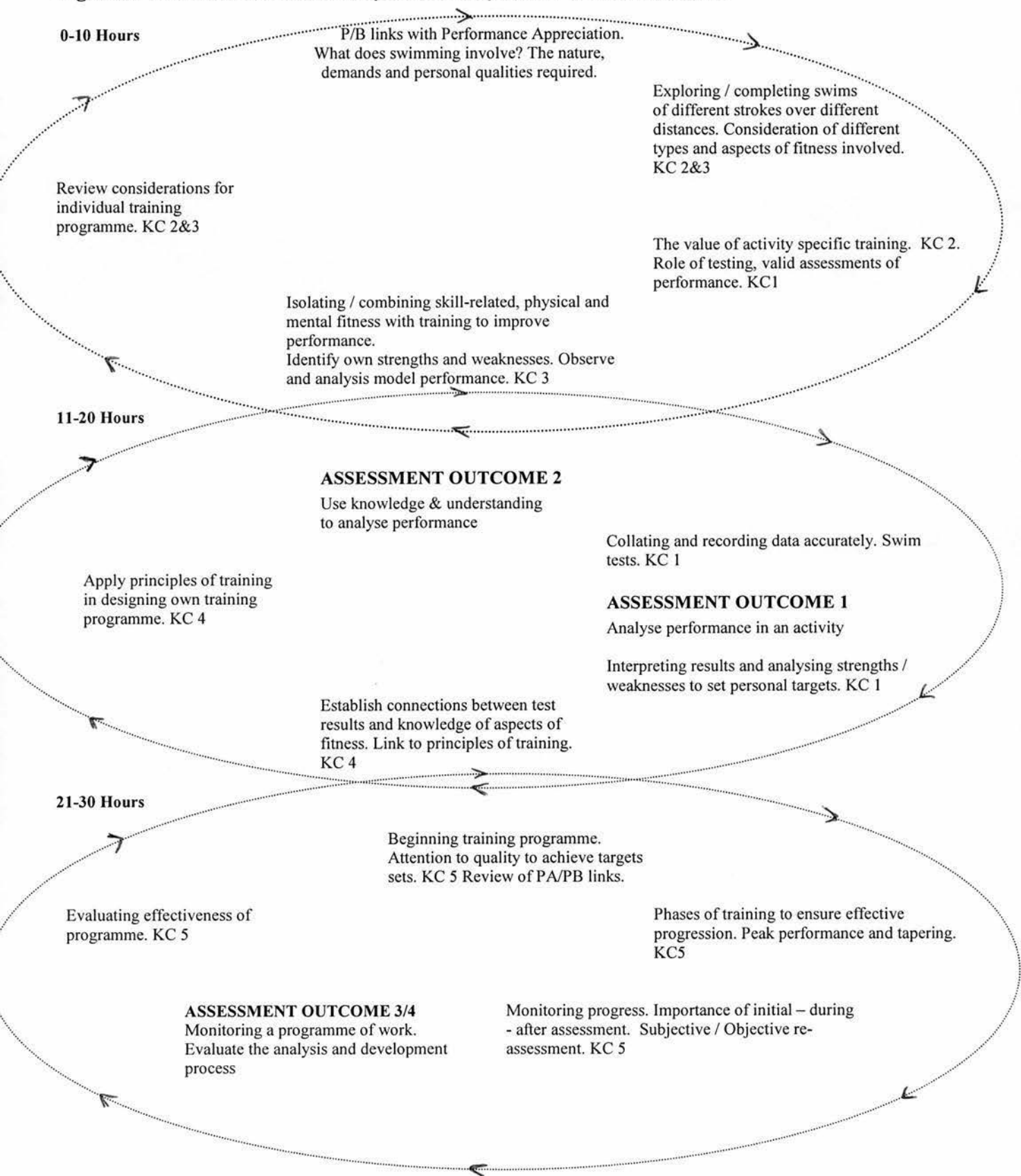
Figure 4: A revised Cycle of Analysis of Performance



With further refinement, teachers could adapt the proposed analytical approach so that students can learn through successive cycles of analysis (Figure 5). These adaptations could ensure that the pace of teaching is active and engaging and reflects the natural flow of authentic performance-led teaching and learning, where the key concepts are not necessarily best overtaken in a once only and invariant sequence.

Figure 5 provides an example of how this approach could be framed. The figure includes specific reference to the learning outcomes of the revised Analysis and Development of Performance unit (SQA, 2004a) and where they appear in the respective cycles of analysis. One further advantage of the revisions offered is the potential which exists for including Performance Appreciation as an area of initial analytical study. Figure 5 indicates how Performance Appreciation could link to Preparation of the Body through students reviewing the nature and demands of quality performance at the outset of the unit of work.

Figure 5: A revised continuous Cycle of Analysis of Performance plan



Overall, evidence from this thesis suggests that the scale of the current teaching, learning and assessment challenges are a source of continuing unease for teachers. Thus, modifications to the curriculum based on reducing content knowledge and simplifying assessment procedures may not be enough by themselves to bring about sustained improvements. As the cycle of analysis is now central to official policy delivery (SQA, 2004a) some guidance and advice about how it might be more productively redefined and deployed have been offered.

Following the analysis of teacher and student interviews and evaluation of student patterns of attainment a digest of findings has been made available to educational colleagues through conference presentations (refer to page vii of contents page) and through the production of peer reviewed articles (Thorburn, 2001b; Thorburn and Collins, 2003; Thorburn, 2004b; Thorburn and Collins, 2006a; Thorburn and Collins, 2006b; Thorburn, 2006c; Thorburn, 2007; Thorburn, 2008).

9.3 Programmes of Professional Development for Physical Education teachers

Despite the benefits of interpreting evidence based outcomes which are specific to the professional issues associated with HSPE evidence, the continuing scale of the pedagogical and assessment challenges indicates that concerns about how best to provide professional development opportunities for teachers remain necessary to consider. As such, there is a need to understand teachers as learners (Feiman-Nemser and Remillard, 1996; Wilson and Berne, 1999) as assisting experienced teachers to reflecting on practice is important; especially if these teachers are to become involved in advising and providing mentoring support to new teachers who require to be protected from the ‘conservative elements within their school’ (Capel 2005, p. 123).

In Scotland, there has been a lack of policy interventions from central government which have outlined how a more systematic approach to professional development would benefit teachers’ evaluation of curriculum awards (Livingston and Robertson, 2001). Specifically, within HSPE the

cascade model of in-service available on national training days was considered ineffective by the lead teacher at one of the 'succeeding' schools and by Brewer (2003) who has contested whether this model offers sympathetic support. Some local clusters of schools have, in the absence of anything more centrally organized, begun organising in-service courses for themselves. While such courses have included insights gained through everyday practices in schools, what is missing is academic theory (Schratz and Walker, 1995). Furthermore, as the 'rote' teachers in this research were asked to lead these types of courses it might well increase the risk of these courses being viewed as nothing greater than an opportunity to fix a problem.

Therefore, getting the balance right between meeting teachers' immediate curriculum needs and longer term professional development requirements merits more detailed analysis and fresh thinking if the teaching of curriculum is to actively engage students and fully meet their learning needs. As Fullan (2003, p. 106) notes it 'is not so much a matter of going down a road less travelled but rather going down one never travelled before because it has not yet been made ...'. This state of affairs is particularly apparent in Scotland where a potential problem in deploying an increasingly sophisticated version of cycles of analysis is to continue with the assumption that teachers necessarily comprehend in adequate detail how to integrate associated content knowledge with experiential and student centred learning approaches. Therefore, providing professional development opportunities which support teachers in achieving the intended benefits of integration is required.

One of the few opportunities for teachers to develop their professionalism in these types of ways was through participation in the first and only National Conference for HSPE organised by Moray House School of Education, University of Edinburgh. The four day course during Easter 2000 attempted to exemplify through lecturer led sessions how the intended integration of experience and knowledge might feasibly occur. However, this conference remains something of a one-off, despite

attempting to meet teachers' requirement for HSPE content knowledge expertise as well as promoting the types of reflective practice ideas associated with the development of pedagogical content knowledge (Shulman, 1986; Shulman, 1987). The continued absence of these types of professional development opportunities combined with the accompanying danger of local authorities scheduling their own in-service opportunities with examples of best practice based on results, rather than on other quality indicators, increases concerns about the narrowing of the domain of learning. Given the current marginalised role of HMIE and concerns over the SQA becoming further involved in providing assessment led in-service training and the current limitations of local authorities' support (Brewer, 2003) questions remain about how best professional development opportunities can be provided. Two proposals are considered here; the first is based on linking subject specific developments with national curriculum and assessment initiatives and the second focuses on providing more effective professional development opportunities for teachers.

Firstly, as evidence from this research suggests that many teachers found it difficult to estimate students' progress accurately it appears merited for teachers to fully involve themselves in national initiatives such as the 'Assessment is for Learning' (AifL) programme (LTS, 2005), which has been developed on the basis that assessment reforms can lead to improvements in teachers setting more appropriate learning and assessment targets for students (Black and Wiliam, 1998; Black, et. al. 2003; Wiliam, 2003). However, while the AifL Programme includes 'not only research on assessment and learning but on the process of change, in particular how the programme might encourage the creation of new knowledge and understanding in areas where currently there are gaps' (Hayward and Hedge, 2005, p. 68) early evaluations indicate that subject and department boundaries in secondary schools have restricted the wider dissemination of best practice. Furthermore 'some students reported embarrassment [when] they were required to publicly answer questions, give explanations or indicate their level of understanding' (Hallam et. al. 2004, p.12-13);

concerns which would be a particular problem in HSPE, where developing these types of capacities are likely to be a crucial indicator of engagement with practical experiential learning environments.

Overall, it is anticipated that further progress in the quality of students' learning and learning skills are dependent upon a closer alignment of formative and summative assessment procedures and 'curriculum content may need to be reduced' as well (Hallam et. al., 2004, p.15). These intentions match many of the outcomes of the NQ review in HSPE (SQA, 2003c) where the revised analytical-based unit was designed to link formative assessment outcomes to summative marking criteria and where there was a major reduction in the breadth of key features described within key concepts (SQA, 2004a). However, the value of the AifL programme may take some time yet to benefit HSPE teachers as findings from this research have highlighted that the frequency of teachers' poor estimates of students' analytical performance indicates the need for a more sharply focused subject based training intervention.

Secondly, therefore what is necessary is to provide professional development opportunities which will encourage teachers to hold themselves responsible for student learning outcomes. The lead teacher from one of the 'succeeding' schools, when asked about the type of professional development opportunities they would like, stated that 'it would be nice to have a bit more live action', before adding '...how to get across principles of training in practical sessions on hockey for example, with eighteen kids, that would be quite nice to see a bit more of'. Thus, the challenge is to be exemplifying how practical experiential learning can link to high levels of authentic attainment, where shared discussion among teachers takes precedence over mere attendance at courses as an indicator of progress (Garet et. al., 2001; Keating, 2001).

There are, though, three apparent problems to overcome in providing these types of professional development opportunities. Firstly, Armour and Yelling (2004, p. 87) advise that 'one of the first

steps in this process must be to listen to the views of experienced teachers'. However, in an HSPE context this would merit a degree of caution given the problems which currently beset practice as described through the classification of school 'types' previously alluded to. Secondly, Ayers et. al. (2004) and Capel (2000) advise that for expert teachers it is the quality of their own professional reflections which are considered vital for longer term professional development. However, even though the teachers in this research were experienced and long serving teachers they were not necessarily expert teachers of examination awards. Accordingly, it might be that, given the degree of pedagogical and assessment change required, teachers' reflections become characterized by shorter term solutions based on fixing a problem than on wider ranging reflections about the quality of students' learning and assessment experiences. Thirdly, as noted in one of the succeeding schools, the lead teacher had great difficulty in interesting younger teachers in taking on greater responsibility for teaching HSPE such were teachers' anxieties about the mastery of content knowledge and associated instructional strategies. Ayers et. al. (2004) indicate that providing stable supportive faculty environments where mentoring support is available to less experienced teachers is necessary in order for teachers to become expert. Overall, therefore, what is required are transformative type professional development opportunities, which recognize the ongoing importance of the three specific issues highlighted (listening to teachers, encouraging open reflection, interesting younger teachers) and which do not become deflected by more immediate concerns.

A possible starting point for evaluating improvements would be for teachers to reflect upon the quality of students' learning experiences. This would include analysing whether students have any content knowledge deficiencies as they enter courses and reviewing the quality of data students use for developing a personalized understanding which merges practical experience learning with content knowledge. These later intentions match those aspired in the AifL programme where student data is used as the basis for teachers' discussions with students (William, 2003). In

developing these ideas, teachers would need to be honest about their own weaknesses in content knowledge, for while the AifL programme intends to be a 'bottom-up' model of improvement, these approaches can only benefit teachers if they possess a detailed understanding of specified content knowledge.

Within HSPE merging the integrated teaching, learning and assessment ideas reflected in the Unit plans (HSDU, 1998b) with the type of exemplifications used in the Easter school in 2000 might represent the most feasible approach for progress, as this type of intervention could recognize teachers' immediate planning and delivery needs as well as considering more generally the quality of students' learning and assessment experiences. These types of professional development opportunities would also recognize that it is unproductive to continue with in-service courses which make assumptions about teachers' pre-existing knowledge as this might lead to the continuance of the rote teaching, learning and assessment problems which exist where 'progress at a systems level rather than in learning' (Hayward and Hedge, 2005, p. 66) often occurs and where reflective thinking can often 'degenerate into an intellectual exercise, and 'good practice' becomes indistinguishable from instrumental cleverness' (Carr, 1995, p. 71).

In achieving sustained improvements in professional practice it also needs to be recognized that the reliance upon external assessment results needs to change. It is inconsistent of teachers to complain about the lack of feedback provided by the SQA without making better use of school based 'unit' assessment evidence which is readily available. Hayward and Hedge (2005) note the dilemmas caused by a profession who do not want a model of teaching and assessment which has a high degree of reliance on internal assessment but then seek the very type of information which it provides. Therefore, the evidence from this research which outlined the potential of teachers' discussions with students for revealing information about the individual strengths and weakness of

students learning needs recognition alongside findings indicating that it was not students' writing difficulties which were the major cause of the imbalance in the level of student attainment.

It might be possible that interventions between teacher education institutions and schools might help teachers to 'confront their own assumptions and values about what constitutes effective judgement' (Wyatt-Smith and Castleton, 2005, p. 151) and to become increasingly concerned by the narrowness of cascade type in-service opportunities, where questions are 'encouraged for clarification rather than to challenge' (Hayward and Hedge, 2005, p. 70). Positive developments between teacher education institutions and schools could lead to a climate of greater openness, which recognises the scale of the challenges teachers face in delivering HSPE and where productive beginnings could be more dynamically developed through a mix of off-site learning accompanying in-school practice and experimentation.

In summary, many of the professional development opportunities available to teachers were either too generic when included as part of national development initiatives or too restricted when offered at local authority level. In recent years there have been few professional development opportunities that are sympathetic to the complex challenges facing HSPE teachers and which genuinely recognise where teachers are starting from. This lack of precision in providing opportunities can lead to teachers 'becoming blind to alternative options' (Purdon, 2003, p. 436) with the risk that curriculum support materials are used in an uncritical and often rote fashion which fails to secure the active engagement of students.

In her role as the national Professional Development coordinator for Scotland, Alcorn identifies eight different categories of teacher requiring support (TES, 2005). One category was summarized as experienced teachers who need different objectives so that they do not become 'tired, bored and boring but challenged and challenging'. Evidence from this research highlights that in all schools

teachers were interested and committed towards their teaching, had very good relationships with students and were valued by school management teams for their professionalism. However, despite being the very opposite of ‘tired, bored and boring’, the majority of teachers still had genuine difficulties in meeting the challenges of HSPE in ways which led to high levels of authentic attainment. Thus, in-service opportunities which recognize the crucial links between teachers’ understanding of content knowledge, curriculum decision-making and reflections on practice are most likely to succeed, and to become the key foundation for meeting teachers’ career-long learning needs. Accordingly, following the identification of the major challenges associated with the professional development of experienced teachers a technical report containing recommendations will be completed. This will be forwarded to HMIE, the SQA, Scottish local authorities and to Scottish universities providing programmes of initial teacher education, postgraduate and professional development programmes for PE teachers.

9.4 Improving practical experiential learning within high-stakes examination awards

Based on evidence emerging from the research findings in this thesis, four research proposals designed to improve understanding of rich teaching and learning environments and authentic attainment are outlined.

Integrated teaching and learning

MacPhail (2004), in an evaluation of HGPE, noted that while over four-fifths of teachers (86%) viewed high-stakes examinations as a worthwhile development just less than half (46%) of those teachers who were planning to introduce HGPE considered that sufficient teaching and learning resources were available. Additionally, less than a third of respondents (32%) considered that the integrated teaching approaches recommended were realistic. However, as the data for the research was collected during the mid 1990’s, it would be useful to ascertain whether the situation has changed in the last decade with regard to the three variables MacPhail evaluated (worthwhile development, lack of curriculum support materials and problematic teaching approaches). The

evidence presented in Chapter 5 regarding the continued positive endorsement which many teachers had towards the rationale for examination awards in PE combined with teachers' endorsement of the curriculum materials developed for HSPE indicates that it is the final variable, the feasibility of integrated teaching and learning methodologies, which requires review.

Research in this study has highlighted that the methodologies adopted in the 'trying' schools were adversely influenced by lack of teacher content knowledge and limited diagnostic use of formative assessment evidence. Furthermore, in the 'rote' schools the prescriptive teaching and assessment approaches deployed were developed in opposition to the benefits advanced in the award rationale (SQA, 2004a). In addition, there was rarely evidence of teachers using the course construction guidelines to the full, as evidenced by the continuing use of a limited range of activities and the ongoing absence of Performance Appreciation in most awards (SQA, 2001b; SQA, 2002b; SQA, 2003b). Finally, the content knowledge expertise presented by teachers in the 'succeeding' schools arose from professional development experiences which took place outside of standard school, local authority and national in-service provision.

Accordingly, what is now required is a more complete understanding of how the highest levels of attainment can be achieved through the intended integrated teaching, learning and assessment approaches. This is important as the 'rote' teachers are the only group of teachers, to date, to secure relatively high but not the very highest levels of attainment on a regular basis. Consequently, what is missing, so far, is a clarity of focus which understands the importance of how teachers' personal knowledge as evidenced through tacit understanding and skilful practice merges with a more formal grasp of content knowledge (Schratz and Walker, 1995). For these benefits to occur, within the type of experiential learning environments planned, the threat of theory would need to be reduced, for as Elliot (1991, p. 45) notes 'from the perspective of teachers, 'theory' is what researchers say about their practices after they have applied their special techniques of information processing. As such it

is remote from the way things are.’ However, as it is ‘only theory [which] can give us access to unexpected questions and ways of changing situations from within’ (Schratz and Walker, 1995, p. 81) theory would require to be present but considered in context and presented in a non-threatening manner.

The remaining question therefore is how can content knowledge be meaningfully included in any associated professional development opportunities and how can interventions recognize the potentially different needs of different teachers at different stages of their careers. Evidence from this research suggests that teachers’ levels of content knowledge expertise needs to be checked (perhaps through a mix of self-assessment and analysis of students’ examination answers and results) ahead of devising in-service opportunities, as a common policy implementation problem in Scotland is the assumption that teachers already possess adequate content knowledge and that schools are capable of deploying centrally prescribed curriculum guidelines. This is unlike BSSSS Senior Physical Education where school involvement is certainly ‘not for all’ (Dudley, 1992, p. 33) until arrangements (including teachers’ content knowledge expertise) have been validated.

Future research

Eraut (2000) argues for the benefits of teachers reviewing new teaching environments when researching how best teachers’ can improve content knowledge expertise practical problem solving expertise. In sympathy with these intentions, one of the expert teachers (when outlining their preference for in-service opportunities) requested the greater prominence of tacit understanding and the skilful practices associated with practical problem solving when trying to understand more about integrated practical experiential learning.

Additionally, Eraut (2000) highlights that it is the speed of decision making which characterizes expertise and that largely intuitive (tacit) based decision-making can in some instances become

explicit upon reflection. Therefore, of fundamental importance is what enables accurate but rapid decision-making to occur effectively. The attributes needed are similar to those required in the medical communities where recent programmes have tried to blend experiential learning with more theoretical approaches (Claxton, 2000; Marton et. al., 1994). However, as Brawn (2000, p.151) points out, when comparing the education programmes of teachers and doctors there is a risk that programmes can lead to the development 'of a forensic rather than holistic mind set' unless discussion is part of teaching and learning, and where teachers and students are able to comment on their 'hunches' and 'feelings' about what works best and such like. In these environments 'the intuitive component of diagnosis either helps to limit the range of possibilities so that a more manageable analytical approach may be adopted, or it leads to the early generation of a hypothesis' (Brawn, 2000, p.158). Pursuing 'intuition' and 'manageable analytical approaches' in a teaching context endorses the proposed redefinitions to the cycle of analysis outlined earlier (Figures 4 & 5), provided that teachers and students have adequate content knowledge expertise and knowledge of viable analytical processes.

Structural learning considerations

In Chapter 5 some of the key reasons why student learning goals should be clear and precise were outlined as was the importance of structure and organization as an antecedent for helping students extend their examination answers (Watts and Bentley, 1991). This evidence, when combined with regular reporting from the Principal Assessor for HSPE detailing the lack of specificity in many answers (SQA, 2001b; SQA, 2002b, SQA, 2003b), highlights that further research is required which examines the effectiveness of how learning organization and learning goals are presented to students. This type of initiative reflects the critique of Donnelly et. al. (1999) who assert that changing teaching behaviour and improving the structuring of learning environments are both required when trying to improve students' critical thinking in PE. With similar ambitions in mind the benefits of linking performance appreciation to phenomenologically informed teaching, learning

and assessment approaches were developed in embryonic terms (Chapter 8), as a methodology for improving the personalization and authenticity of learning and for exemplifying how learning is integrated.

Future research

One possible relevant research intervention would be to review the highest scoring written examination answers (e.g. measuring the scripts of the top one per cent of students across Scotland) and measure the extent to which students' answers were authentic in their construction. Follow up interviews with selected students could be completed as necessary to gain greater insights into the teaching, learning and assessment process. There are inevitably challenges in completing this type of research for, as Cumming and Wyatt-Smith (2001, p. 158) note, high achieving students in the final years of secondary schooling 'can have difficulty in explaining some of the decisions they make, since the patterns of problems and appropriate responses have become highly automatic and unconscious'. Yet, on the basis that 'most of what is learnt is achieved by effortful attention, and therefore needs to be structured' (Cumming and Wyatt-Smith, 2001, p. 159), there is an apparent value in completing this type of research as investigations should reveal at the very least those schools where high achieving students learn in authentic teaching and learning environments.

The development of curriculum literacy

Some research on expert teachers of high-stakes examination awards has found that developing student understandings was built around productive problem solving teaching approaches, which involved questions that attempted to link existing and new areas of knowledge (Ayers et. al., 2004). Accordingly, expert teachers combined effective whole class and individual student teaching through careful use of convergent (whole class) and divergent (individual student) questions. In these learning environments, students were expected to accept responsibilities for note taking and for the overall quality and relevance of their writing (Wyatt-Smith and Cumming, 2003). The

findings of Wyatt-Smith and Cumming (2003) were based on filmed evidence of classroom observation with students who were completing their final years of senior high school. Evidence was then analysed to identify how students engaged with different areas of curriculum literacy (note-making, mix of spoken and written tasks, discursive writing, text analysis) and completed assessment tasks.

In this thesis, data has included analysis of student attainment outcomes and of students' learning experiences plus reflections from teacher interviews about their curriculum decision-making.

However, a possible problem with the research methodologies adopted is that teachers have only discussed their practice; a situation which Penney and Evans (1999) found relatively limiting when evaluating the National Curriculum for Physical Education in England and Wales. Thus, observational analysis could potentially capture the fine detail of teacher-student interaction and engagement in practical teaching and learning environments. Conceivably, findings could acknowledge the challenges involved in practical experiential learning and add to our understanding of the pedagogical repertoire displayed by teachers.

Future research

Research based on observations of practice would enable tacit expertise (including the key teaching skills of reading the context, interpreting situational conditions and making adjustments during lessons) to be analysed. To date, because many of these skills appear intuitive, there has been a tendency to focus on explicit elements such as lesson plans, evaluation of outcomes and interpretations of teacher and student interviews to the exclusion of analysis of expert teachers who possess the ability to function fluently and flexibly in complex situated domains without necessarily being able to theorize about expertise. Consequently, further research could enable new ways of understanding and interpreting teacher behaviour to emerge; a position viewed by many as essential for the investigation and eventual promotion of effective professional practice (Eraut, 2000).

Furthermore, interpreting research findings which acknowledge that teachers in action do not have

time to reflect on complex learning theories, but instead act quickly to engage and interest students could dovetail with designing professional development opportunities where subsequent time for reflection was included. As a result, cycles of reflective practice could lead to teaching improvements where the deliberative thinking skills necessary in planning blend with the intuitive thinking skills necessary in delivery.

Recently, Cumming and Wyatt-Smith (2001) have pioneered the use of close-up camera work to capture snapshots of students' specific learning experiences as well as an overall picture of whole-class teaching and learning. Film analysis could enable the special challenges associated with practical experiential learning to be interpreted and discussed through reviewing the multiple literacy demands made on students and the decision-making actions of teachers when seeking to secure and retain the active engagement of students.

Overall, the research intervention proposed should be capable of providing insights which inform the design protocols for future awards and for programmes of education and professional development for new and experienced teachers. This would be useful for, as various authors (Brophy and Good, 1986; Leinhardt and Greeno, 1986; Ayers et. al., 2004) have highlighted, analysis of teachers' flexible control, productive relations with students, capacity to differentiate according to ability, use of group discussions, time for note making, question sequencing and commitment to content knowledge are critical for effective learner engagement with the learning process. Therefore, analysis of teachers' planning intentions (through interviews) and analysis of teaching could enable the nature and demands of teacher-student discussions to be further understood once findings from students about whether their capacity for exercising increasing responsibility and autonomy in learning was occurring was also considered.

Practice / theory learning environments

The scale of the various challenges experienced in the 'trying' and 'rote' schools, which led teachers to deploy practice and theory modes of delivery rather than an integrated teaching and learning approach advised were commented upon in Chapter 5. Clearly, interventions that assist teachers in becoming more confident in teaching in the ways intended and which are capable of securing high levels of practical experiential learning and high levels of active student engagement should be further researched.

Future research

Given the acknowledged weaknesses of the cascade model of professional development (Armour and Yelling, 2004), what type of initiative could bring about the type of authentic teaching and learning improvements necessary? One suggested intervention is based on implementing Joyce and Showers' (2002) model of coaching, which is premised on the notion that teachers' learning to learn is as important as the acquisition of new knowledge and skills. Accordingly, the model merges planning and resource development with professional observations of teaching. In the case of HSPE this could be particularly beneficial as there is a need for teachers to understand more about the degree of unpredictability which is common within experiential learning environments as well as addressing concerns about teachers' poor levels of content knowledge understanding. Joyce and Showers (2002) specify that for improvements in student attainment to occur the following teaching qualities are necessary; persistence and flexibility, understanding the need for theory, changes to pedagogical practices and the involvement of other faculty teachers; qualities which were much more apparent in the few 'succeeding' school identified in this research.

Effective deployment of the Joyce and Showers (2002) model could lead to coached teachers of HSPE using practical experiential teaching and learning approaches for longer and with greater skill, and in ways which were understood better by more students. Accordingly, what is suggested is that a combination of off-site training and in-school experimentation occurs with schools

currently identified as ‘trying’ schools. This could occur through suitably qualified teacher education staff working on a peer coaching basis with PE teachers on negotiated targets for improvements. The evaluation of the efficacy of this action research intervention could be analysed by interviews with teachers about their professional growth rather than by a compare and contrast analysis of student attainment. This is necessary because establishing and recognizing what appear to be the antecedents for assisting teachers to evaluate outcomes and the efficacy of their curriculum and pedagogical practices would be the major priority. Thus, the research could become a seed for a larger scale intervention once the efficacy and strengths of the model of training has been established.

Summary

During a time of increased political and policy interest in PE (Scottish Executive, 2004a) there is a risk that the problems besetting HSPE could be overtaken by other priorities within the subject. Evans (2004) and Houlihan and Green (2006) have advised recently that the unfocused nature of much of the critique surrounding PE increases the likelihood of fragmentation of provision occurring as various programmes try to respond to a range of often contrasting objectives. Therefore, critical to ensuring that examination awards in PE meet the conditions of developing a coherent understanding of the benefits of integrated learning, it is necessary for the policy and practice communities to elaborate on how opportunity and progression are provided for students through experiential learning in different awards. To date, the value for students of learning in these ways has often been overtaken by the difficulties of teaching awards in authentic ways. For these reasons completing research which addresses the range of further interventions outlined is necessary.

9.5 Conclusion

In summarizing the new knowledge which has emerged following the completion of this research the first conclusion which is apparent is that the scale of the pedagogical challenges associated with delivering examination awards has been consistently underplayed. This conclusion might appear rather unremarkable in itself, but it is important to recognize that examination awards have been part of Scottish PE for two decades, yet this is the first research study which has analysed teachers' commentary and tracked the development of students learning and assessment. Furthermore, this general conclusion indicates that the placatory and sympathetic manner within which the policy community has attempted to develop different awards has in the longer term not necessarily been as helpful as intended. Overall, a rather more open and honest assessment of the complexities involved in teaching awards in an authentic way was required. Consequently, there are a number of teacher effectiveness issues which remain outstanding and which merit further research.

Of course, underpinning any such effectiveness issues is the necessity of analysing whether a performance-led award can really be delivered authentically within a high-stakes curriculum setting. In this respect, the new conceptual thinking and phenomenology informed writing contained in this thesis should be reviewed and further researched so that the extent to which it is feasible that personalized learning can effectively link to high levels of attainment within high-stakes examination awards can be understood in greater detail by the research, policy and practice communities alike.

However, for the teaching of HSPE to progress further, a greater commitment to professional development which addresses the content knowledge deficiencies and pedagogical and assessment complexities of effective teaching is required. This research has frequently identified areas where a blind eye of convenience has been turned to such matters. Only if a commitment to professional development occurs is it likely that awards such as HSPE can contribute more effectively to a wider

transformative agenda within education, which demonstrates that modern examination awards in PE can link intelligent informed participation to high levels of authentic attainment.

Appendix 1: Key Concepts in four different areas of Analysis of Performance in Higher Still Physical Education

Area 1 requires students to adopt a broad perspective on their performance and to demonstrate their knowledge and understanding in the way they plan and manage their training to improve performance.

Area 1: Performance Appreciation (PA)

Provides general parameters which may be used in each of the other areas.

- The overall nature and demands of quality performance
- personal performance qualities, such as imagination, flair and creativity - strengths and weaknesses, needs and challenges
- mental factors influencing performance, including motivation, preparation and mental state during performance
- appropriate models of performance to help establish training priorities and personal style
- planning and managing personal performance improvement, including long- and short-term goals.

Areas 2, 3 and 4 require students to demonstrate knowledge and understanding of specific aspects of performance and how they relate to overall improvement of performance. In these areas, all of the key concepts listed below, should be studied.

Area 2: Preparation of the Body (PB)

The student's status and fitness requirements pertaining to performance goals.

- types of performance-related fitness and specific applications to selected activities
- physical, skill-related and mental fitness
- fitness assessment in relation to personal performance and the demands of selected activities
- principles and methods of training
- planning and implementing training in pursuit of goals, through phases of training, training cycles and the monitoring of progress.

Area 3: Skills and Technique (ST)

The development of refined technique in pursuit of performance improvement.

- concept of skills, technique and skilled performance as appropriate to the nature of activities
- technique improvement through mechanical analysis or movement analysis or consideration of quality
- ways of learning skills and developing technique:
 - stages of learning, methods of practice
 - principles of effective practice
 - motivation, concentration and feedback.

Area 4: Structures, Strategies and Composition (SSC)

The influence of shape, form and design on the student's performance.

- the structure, strategies and/or compositional elements that are fundamental to selected activities
- identification of strengths and weaknesses in performance in terms of:
 - roles and relationships, formations
 - group and team principles
 - tactical or design elements
- problem-solving and decision-making to improve performance

Appendix 2: Part A. Student interview schedule - Collecting information

(These questions are used for all areas of analysis of performance, even though it is expected that the answer relate specifically to a distinct area of analysis of performance and one activity.)

1. Explain the methods you used for collecting information and why these methods were appropriate?

- *Specific to their role / performance and to their performance level*
- *Relevant to area of analysis of performance being studied*
- *Mention of benefits of methods selected – accurate, useful for interpretation*
 - *Observation schedules (why used - criteria used, context (practice / game), who completed observation, benefits, objectivity, amount and detail of information collected, – why appropriate)*
 - *Video (why used - repeat viewing, watch at slow speeds context (practice / game), amount and detail of information collected, objectivity, viewing angles / position, benefits – why appropriate)*
 - *Knowledge of results (why used - strengths / weaknesses of specific technique / strategy / level of endurance etc, objectivity, – why appropriate)*
 - *Reflections on own performance (why used - personal, meaningful, critical reflection, subjective, – why appropriate)*
 - *Relationship between different methods of collecting information (were any used e.g. video followed by completion of observation schedule, increase objectivity, meaningfulness etc)*

2. What information about your performance did you obtain from the data you had collected and why was it relevant to your performance.

- *Specific to their role / performance and to their performance level. Can they get beyond terms like “my strengths and weaknesses”, “things I was good at”, and “my game got worse” rather than the required specific descriptions of features of their performance.*

3. Explain the course of action you designed to improve your performance and how you evaluated whether your course of action was effective.

- *Does the course of action build logically on the method of collection information and what has been ascertained about performance*
- *Does it link clearly to the area of analysis of performance and the activity that was selected*

Appendix 2: Part B. Student interview schedule - Content Knowledge: Analysis of Performance - Skills and Technique

Key concepts

1. Concepts of Skills and Technique and Skilled Performance in Selected Activities
2. Technique Improvement through Mechanical Analysis or Movement Analysis or Consideration of Quality
3. Ways of Learning Skills and Developing Technique. These include: Stages of Learning; Principles of Effective Practice; Methods of Practice; Motivation, Concentration and Feedback.

1. Describe some qualities you would expect to see in a skilled performance.
- A skilled performance would perform linked movements with maximum efficiency. As a result, you would expect to see qualities such as control, fluency, consistency, economy (effort) and effective decision-making through selecting correct options.*
2. Technique improvement can be judged by mechanical analysis, movement analysis or by consideration of quality. Explain the judgements you would make when using these three methods of analysing performance.
- *Mechanical analysis information might include judgements about how the body moves through consideration of centre of gravity, force/resistance, action/reaction, use of body levers and planes of movement.*
 - *Movement analysis information might include judgements about managing effort factors in performance and through the different phases of action such as preparation, action and recovery.*
 - *Consideration of quality might include judgements about different technical, physical, personal and special qualities.*
3. Explain the form and uses of external feedback at each of the stages of skill learning.
- *At the planning stage, external feedback should be short and concise because the skill is new to you. You require advice which is straightforward to understand because you have yet to become familiar with the subroutines that make up the skill.*
 - *At the practice stage, external feedback can be provided less frequently. This is because it takes time for you to practice linking movements together. External feedback at this stage can become more detailed.*
 - *At the automatic stage, much less external feedback is required. However, the fine detail of your performance might require attention. As a result, external feedback would be much more detailed.*

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